Hydrogen

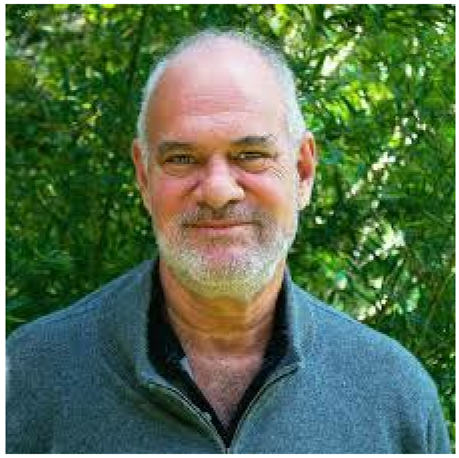
Medicine

Combining Oxygen with Hydrogen and CO2



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Preface



Hydrogen Medicine is revolutionary. This book represents a new medical paradigm centered on the three essential gases; hydrogen, oxygen and carbon dioxide. This paradigm will change the face of modern medicine and save millions of lives.

Just for starters, half a million sepsis patients, in America alone, could be saved if every Intensive Care Unit (ICU) installed hydrogen inhalers, medical devices that output hydrogen gas, at various concentrations, or units that put out a combination of hydrogen and oxygen gas. In the future that this book envisions oxygen will not longer be given alone but always with hydrogen.

Hydrogen molecules and ions are the backbone of the universe; in a thousand years we will still see hydrogen running the sun. Hopefully it will not take that long before hydrogen therapy is being widely used during surgery, in ambulances, clinics, spas and in all homes where people are interested not only in surviving but in thriving in a world of toxicities and exceptional stress.

Oxidative stress, caused by rivers of free radicals, is a plague on modern man. It's the toxic pollution in the air we breathe 24/7, multi chemical exposures, increased background radiation, heavy metals, radiation from the indiscriminate use of medical imaging, pharmaceutical medicines, chemotherapy, your cell phone constantly next to your brain, even your WI-FI and other EMF pollution generating devices. All these things increase oxidative stress, which eventually drags us into the morass of disease and cancer. **Molecular hydrogen is the perfect medical treatment for oxidative stress**.

Inhaling hydrogen gas with a hydrogen inhaler device can extinguish the most intense

oxidative fires and inflammation, which means we have a reasonable chance of pulling out of whatever disease we are facing. In a sense it is the ultimate medicine.

From a cell's point of view, hydrogen inhalation is like standing under a waterfall that invigorates even as it cools. Not only does everyone get something from hydrogen; but life cannot exist without it.

Hydrogen therapy is ultra-serious medicine. It is a new clinical mode of treatment for many diseases including surgery, tissue damage and dysfunction,[i] diabetes, heart disease and cancer. On the health end, hydrogen offers the long sought-after fountain of youth. The rocket power of hydrogen is put into one's mitochondria.

Hydrogen inhalation (breathing the gas) is a form of medicine that doubles as a health practice. Some users are already saying that they regard H2 inhalation as a necessary basic act of life, like eating and drinking and exercising because it has that much to give us. For late stage cancer sufferers, hydrogen inhalation is like getting two or more intravenous Vitamin C treatments a day with absolutely no toxicity. In the ICU it can be administered 24/7, meaning until the patient gets up and out of bed.

Hydrogen gas, along with hydrogen impregnated water, offers doctors and patients alike novel therapeutic strategies that promote health and quality of life in athletic and clinical environments. Hydrogen also has its beauty applications, having a strong effect on the skin.

Higher levels of hydrogen have been shown to protect DNA against oxidative damage by suppressing single-strand breakage of DNA caused by ROS. Hydrogen also protects against oxidative damage to RNA proteins.[ii] It also goes to the toes, so anyone suffering from diabetic foot or any kind of neuropathy will be delighted with the inhalation of hydrogen gas over a few months' time. Like carbon dioxide, hydrogen can even be pumped into a bagged arm or leg to topically treat syndromes like gangrene.

My writings on hydrogen are enthusiastic for a reason. Hydrogen medicine is new, and it will assume its rightful place next to oxygen. Hydrogen in life threatening situations can be dramatic (even miraculous) but people starting therapy need to give hydrogen time. Over the long haul it just keeps working like a solar wind, filling our sails and pushing our ship of life away from the rocky shoals of sickness and death.

Hydrogen is not an instant magic wand, unless that instant is with a person taking their last breaths. Then it will work the same as it does for Navy divers down almost 2,000 feet. At those depths hydrogen will keep a person alive and functioning. Hydrogen has a great future in intensive care.

If one is looking for dramatic effects, then one needs to spend dramatic amounts of time inhaling hydrogen gas. If your life is on the line think about four one-hour sessions a day. If you are dying, plug yourself in and don't stop until you feel improvement. Otherwise two hours a day, while continuously drinking hydrogen water will eventually give you escape velocity from a full range of pathologies.

Although hydrogen is not a miracle medicine one can expect many miracles to happen. I was talking with Tylor LeBaron of the Molecular Hydrogen Foundation saying, "Hydrogen therapy may not offer enlightenment, but for the very sick I imagine it might seem that way. And he responded, "Yes, for sick people it does offer enlightenment, and even for those that are not sick, it may improve their cognitive function."

Hydrogen is by far the cleanest form of energy and is also the safest medicine; meaning it has no bad effects, only good ones. Going through life and facing disease is easier if we fill our bodies and cells with hydrogen.

Safety

A good point is made for pure hydrogen machines in terms of safety. Hydrogen, when mixed with oxygen, is potentially explosive, so one would not want to have a lighted match near one's nose when breathing mixtures of hydrogen and oxygen.

The particular mixture of 66% percent hydrogen and 33% oxygen is very close to the *stoichiometric* perfect mix (Stoichiometry) to create a phenomenal explosion between the hydrogen and the oxygen. The initiation energy for such an explosion would be tiny: it probably wouldn't even need a spark, yet there are medical devices that put out these types of concentrations; none of them which I would recommend, except to hospitals which will soon have machines so advanced that doctors can get complete control over both gases at very high concentrations and flow rates in intensive care and surgical situations.

I do have to say that if you look hard enough you will find someone who says, 'We do breathe hydrogen: only trace amounts of hydrogen (H_2) are present in the inhaled air so we shouldn't breathe more.' Or crazy things like 'Breathing pure hydrogen will kill you,' as if you could breathe pure hydrogen from any of these inhalation machines, which you cannot. Pure oxygen would kill you too and that's why they always put CO_2 into oxygen cylinders.

I want to point out that this is the first comprehensive look at hydrogen medicine and how it fits in with medicine as we know it. It offers a giant leap forward in medical

practices of all types, allopathic, chiropractic, homeopathic and naturopathic. Every branch of medicine including Chinese medicine will benefit from the use of hydrogen.

This book is for doctors and other healthcare professionals, but also for patients and their families who have no desire to wait for doctors to catch on to the hydrogen medical revolution. Hydrogen is here now, its widely available, and all we must do is extract the H_2 from the H_2O. That is what hydrogen inhalation devices do.

The Urgency of this Book

The main point of this book is to promote hydrogen therapy. Anyone with a life-threatening disease needs a hydrogen inhaler now. It should be perfectly clear that I am recommending the inclusion of hydrogen inhalation therapy for a broad range of conditions. My first patients on hydrogen inhalation were life and death cases and I am glad to say that hydrogen facilitated life. You will see the principle cases that shaped the direction of my thoughts on hydrogen therapy in the third chapter *Notes from the Author*.

[i] Protective Effect of Hydrogen Gas Inhalation on Muscular Damage using a Mouse Hind Limb Ischemia Reperfusion Injury Model. Plastic & Reconstructive Surgery: Post Acceptance: August 23, 2017. http://journals.lww.com/plasreconsurg/Abstract/publishahead/Protective_Effect_of_H

[ii] M. Lee, Y. Kim, K. Ryoo, Y. Lee and E. Park, "Electrolyzed-reduced (Hydrogen Rich) Water Protects against Oxidative Damage to DNA, RNA and Protein," Appl Biochem Biotechnol, pp. 135(2):133-44, 2006.

Introduction



Modern medicine is about to discover how brilliant, safe and effective hydrogen can be. Molecular hydrogen brings a revolution in medicine, one that every doctor and patient will be interested in. The science is irresistible and mounting clinical experience is pointing to hydrogen as the strongest, simplest and safest medicine in existence. After experimenting with toxic pharmaceuticals, heavy metals and radiation over the last century we now find hydrogen gas and hydrogen water making headway into the mainstream of medicine where it is already saving lives.

Hydrogen gas inhalation therapy is arriving just in time for many who are not keeping up with their health challenges and medical costs. Those whose needs are the greatest will benefit most from hydrogen because it penetrates the mitochondria, DNA and every extremity in the body. Already accepted in Japan and China, this pure fuel that sends rockets into space has been found to be exceedingly useful in the world of medicine.

Doctors are just learning that hydrogen can be provided as a medicine, a lifesaving medicine. Emergency room doctors, ambulance paramedics and intensive care doctors will be the first to understand the real importance of hydrogen. Instead of just adding a little oxygen they will be applying hydrogen, oxygen and making sure CO_2 levels rise as well.

It is a good thing these gasses are freely available, cannot be patented and are easily made in our own homes. Hard research sustains the view that hydrogen is a medicine of

the future that has arrived today. Of course, there is a limit to hydrogen and what it can do when it floods your body's fluids and cells. But when backed by a full protocol most of those limits are removed.

Hydrogen to the Rescue

What is the first thing the fire department does when its trucks arrive at a fire? They pull out the hoses, connect to the hydrants, and pour tons of water onto the nastiest fires. In the medical world, the equivalent is hydrogen, which too can be flooded into a dying body to put out the flames of inflammation and oxidative stress.

As you shall see throughout this book, molecular hydrogen (H_2) functions as an extensive protector against oxidative stress, inflammation and allergic reactions.[iii] Molecular hydrogen is a medical gas that can be dissolved in water or administered through drinking, inhalation, applied transdermally, used in baths, and by intravenous drip (IV). Molecular hydrogen has proven useful and convenient as a novel antioxidant and modifier of gene expression where oxidative stress results in cellular damage.

> A man who has Type 2 diabetes was not getting results using hydrogen inhalation. When asked how he was doing his hydrogen therapy he said he was inhaling the gas, but only drinking a little water. After being urged to drink the water more regularly he bought 3, 17 oz. stainless thermos bottles drinking that much hydrogen water each day. His blood sugar was getting out of control, and doctors were having to increase insulin to attempt to manage his blood sugar. But since he's been combining H_2 inhalation with drinking the water daily, his blood sugar has come down and normalized after about 1 week. The consensus seems to be that it is always best to drink and inhale hydrogen as simultaneous therapies.

Hydrogen is able to cross the blood brain barrier, enter the mitochondria, and "even has the ability to translocate to the nucleus under certain conditions," reports Dr. Brandon J Dixon in *Medical Gas Research*. Because of its size, molecular hydrogen can do a lot of things larger molecules of known antioxidants can't. Once in these ideal locations of the cell, previous studies have shown that hydrogen exerts antioxidant, anti-apoptotic, anti-inflammatory, and cytoprotective properties that are beneficial to the cell.

There are no safety issues with hydrogen; it has been used for years in gas mixtures for deep diving and in numerous clinical trials without adverse events. There are no warnings in the literature of its toxicity or long-term exposure effects.

At the level of the three primary gases, which are the most essential ingredients of life, one simply cannot talk about one without the others. Certainly, the most brilliant medicine will incorporate all three in practice. Even though oxygen is prescribed as a medicine in hospitals, it is an essential nutrient that we breathe 24/7. So are hydrogen and even carbon dioxide, which is as essential for our health as it is for plants.

Hydrogen will quickly change the landscape of a person's present condition and that is why doctors in the west are beginning to take notice. Combined with its excellent safety record, hydrogen has many unique characteristics that make it very valuable in medicine and health. Its systemic properties and penetration abilities allow hydrogen to be effective under conditions of poor blood flow and other situations that limit many other types of systemic treatments.

Hydrogen protects us from harm

The first report demonstrating the benefits of drinking hydrogen water in patients receiving radiation therapy for malignant tumors affirms how helpful hydrogen is for radiation exposure. This finding provides the foundation for a clinically applicable, effective, and safe strategy for the delivery of hydrogen gas to mitigate radiation-induced cellular injury.[iv] In an increasingly radioactive world and with doctors using more radiation to diagnose and treat disease than ever, hydrogen will be life saving for many.

It is worth repeating that hydrogen helps protect us from the cellular damage caused by caused by cell phones, Wi-Fi and all the EMF pollution that is increasingly plaguing us and about to get worse with the implementation of G5.

The Fire of Life

Just as every sun needs mountain ranges of hydrogen every minute to run themselves, humans too run on hydrogen. Supplying a lot more, in the form of molecular hydrogen gas and water, ignites a fire in us. A healing fire that medical scientists believe is even good for impossible to cure diseases like muscular dystrophy and many other diseases that modern medicine has failed to find answers for.

Medical scientists focus on the antioxidant implications of hydrogen, finally having a powerful enough fire truck to put out the nastiest oxidative fires. But we also see (and will present chapters dedicated to) hydrogen as a fuel, not only for rockets and cars but for the mitochondria in our cells.

It is the fire of life that gets stimulated. If one needs healing that fire will be directed exactly to the place it is most needed. It is a perfect fire that is created when hydrogen is administered with oxygen. Perfect in that it burns coolly because hydrogen is a flawless antioxidant.

We can create a perfect hydrogen flame by balancing the three gases so that the mitochondria fire up their production of ATP. With sufficient hydrogen, the mitochondria will burn without oxidative prejudice because the hydrogen is putting out the fires of oxidative stress even as it is the fuel that lights the fire.

Hydrogen is one of the primordial elements that fueled the development of all life on Earth. Human beings cannot live without hydrogen. While science refers to us as carbon-based life forms, man is also a hydrogen-based life form. When plants absorb sunlight, they store negatively charged hydrogen ions through the process of photosynthesis. When you eat unprocessed plants, your body's cells utilize the nutrients in those plants with the electrical charge of the hydrogen ions. When your body burns hydrogen and oxygen, it generates the energy you need to live.

All living things must have hydrogen to sustain life. The human body must breathe to get oxygen and must eat and drink to get hydrogen. The primary sources of hydrogen ions for the human body are fresh uncooked plants, fruits, vegetables, and water. Now we can inhale it directly in the form of molecular hydrogen gas. That gas can also be dissolved in water, so we can drink it and doctors can inject it.

What Hydrogen Will Not Do

I think it is appropriate before we launch on all the things hydrogen can do for us to discuss what hydrogen will not do. It will not resolve a busting appendix though it should be used during and after surgery. It will not resolve the conflicts and stress people feel from deep rooted personality problems. Though it can strengthen a person's sexuality it will not touch on patterns of behavior and thought about sex and the stress that comes from that. It will not, all by itself, balance the three nervous systems or what in Ayurvedic Medicine calls the three primary forces of **Vata, Pitta** and**Kapha. Hydrogen will not balance meridian energies nor affect the chakras in any meaningful way.**

[iii] Med Gas Res. 2011; 1: 18. Molecular hydrogen protects chondrocytes from oxidative stress and indirectly alters gene expressions through reducing peroxynitrite derived from nitric oxide

[iv] Med Gas Res. 2011; 1: 11. Effects of drinking hydrogen-rich water on the quality of life of patients treated with radiotherapy for liver tumors

New Advances in Gas Therapy

Combining Oxygen with Hydrogen and CO_2



Ambulance crews have often regarded oxygen as something approaching a wonder drug. Oxygen has always been a lifesaving treatment and now doctors and patients can do much more lifesaving because they will be able to give oxygen in combination with hydrogen. This will have a strong impact on the future practice of medicine.

Just a few short years ago I introduced, in my book *Anti-Inflammatory Oxygen Therapy*, a new form of EWOT (Exercise with Oxygen Therapy) that allows for unlimited oxygen to be administered safely. In fifteen minutes one can open the cells allowing them to detoxify as they gulp down high levels of oxygen. I wrote that this therapy will help many people pull out of chronic situations which they had not been able to do before.

This form of therapy is ideal, especially for cancer patients who can exercise, increasing their chances of not dying from cancer, because it generated massive amounts of CO_2 while breathing concentrated oxygen. The CO_2 is what makes taking in so much oxygen safe!

Hydrogen, Oxygen and Carbon Dioxide (CO_2) make up a holy medical trinity, which together can perform wonders with patients if one knows how to use them correctly. Fortunately, it is easy to balance the three gases, and everyone will be able to do it at home.

Hydrogen allows the body to function and breathe under stress! The United States Navy developed procedures allowing dives between 500 and 700 meters (1650 to 2300 feet) in depth, while breathing gas mixtures based on hydrogen, called hydrox (hydrogen-

oxygen) or hydreliox (hydrogen-helium-oxygen).

Although the first reported use of hydrogen seems to be by Antoine Lavoisier (1743-1794), who had guinea pigs breathe it, the actual first uses of this gas in diving are usually attributed to trials by the Swedish engineer, Arne Zetterström in 1945. Breathing a mixture of 96% hydrogen and 4% oxygen he was able to dive deeper than anyone before.

Hydreliox is breathing a gas mixture of helium, oxygen and hydrogen. For the Hydra VIII mission at 50 atmospheres of ambient pressure, the mixture used was 49% hydrogen, 50.2% helium, and 0.8% oxygen. Because hydrogen is the lightest element, it is easier to breathe than nitrogen under high pressure.

It is hard to imagine a more stressful situation than being that deep under water. Marine scientists figured out a long time ago what hydrogen can be used for and now the rest of us will. If hydrogen can keep us alive under great stress at bone crushing depth, think of what it can do if one is on their deathbed or suffering from a chronic disease, cancer or even sepsis.

Medical Gases

Heliox is a breathing gas composed of a mixture of helium (He) and oxygen (O_2). Heliox is a medical treatment for patients with difficulty breathing. The mixture generates less resistance than atmospheric air when passing through the airways of the lungs, and thus requires less effort by a patient to breathe in and out of the lungs.

Heliox has been used medically since the 1930s, and although the medical community adopted it initially to alleviate symptoms of upper airway obstruction, its range of medical uses has since expanded because of the low density of the gas.

Through the Bohr Effect,[v] medical scientists have known for a century how important and useful carbon dioxide (CO_2) is as a medicine. However, hydrogen allows for quicker healing and recovery than when oxygen and CO_2 only are used. When it comes to CO_2 it is good to get out of our heads the negative propaganda on CO_2 as a waste product or warming gas. The linking of carbon dioxide levels moving from 0.028% to 0.04% of the atmosphere to global warming is purely imaginary.

Multiple organ dysfunction syndrome (MODS) is a leading cause of mortality in critically ill patients. Hyperoxia (oxygen) treatment is beneficial to critically ill patients, however, the clinical use of hyperoxia is hindered as it sometimes exacerbates organ injury by increasing reactive oxygen species (ROS). Both CO_2 and hydrogen reduce the toxicity of

oxygen, so it is wise indeed to conceive of the future practice of medicine centered on these three gases used as one.

Hydrogen gas (H_2) exerts a therapeutic anti-oxidative effect by selectively reducing ROS, this is one of its main effects and why hydrogen is perfect companion to oxygen. One of the key studies on hydrogen sustains the view that hydrogen and oxygen inhalers belong everywhere in the world of medicine and health, including in ambulances and intensive care departments. Better yet they belong in every home being the best investment one can make in one's health.

> Combination therapy of H_2 and hyperoxia has previously been shown to significantly improve survival rate and reduce organ damage extent in mice with polymicrobial sepsis.[vi]

Medical gases trigger naturally occurring physiological responses, enhancing the human body's preventive and self-healing capabilities. Medical gases include carbon dioxide, oxygen, nitrogen, nitric oxide, helium and most recently hydrogen. Medical gases can be used on their own or in combination for therapeutic effect or as an insufflation during surgery.

Nitric oxide is a gas that is inhaled. It works by relaxing smooth muscle to widen (dilate) blood vessels, especially in the lungs. Nitric oxide is used together with a mechanical ventilator to treat respiratory failure in premature infants. Increased levels of CO_2 also dilate blood vessels while positively affecting the oxygen disassociation curve from the red blood cells. Molecular hydrogen (H_2) has been accepted to be an inert and non-functional gas in our body but this is not correct. H_2 reacts with strong oxidants such as hydroxyl radicals in cells and exhibits other extensive effects.

Pediatric and neonatal patients have an assortment of physiologic conditions that may require adjunctive inhaled gases to treat a wide variety of diseases. Inhaled nitric oxide, helium oxygen mixtures, inhaled anesthetics, hypercarbic mixtures, hypoxic mixtures, and hydrogen have been used to alter physiology in an attempt to improve patient outcomes.

Carbon Dioxide Bicarbonate Deficiency

Dr. Lynda Frassetto has contributed much to our understanding of bicarbonate deficiencies, and why increases of bicarbonates in the bloodstream will prevent aging and the onset of adult degenerative diseases.[vii]

Insufficient amount of bicarbonates or CO_2 in our blood reduces our capabilities to

manage (neutralize and dump) the acid our body produces. This is the cause of aging. 45 is the average age when human beings start to show symptoms of diabetes, hypertension, osteoporosis and many other adult degenerative diseases. Since we cannot manage the acid, it accumulates in our body. These wastes show up as cholesterol, fatty acid, uric acid, urate, sulfate, phosphate, kidney stones, etc.

In the January/February 2003 issue of American Industrial Hygiene Association Journal, Dr. Gospodinka R. Pradova published the result of a 10-year study of industrial pollution in Bulgaria. The study compares two groups of people in a plastic manufacturing plant: one group working in the plant with chemical pollution, the other in the non-polluted office environment of the same company. The conclusion shows that **people living/working in a polluted environment have fewer amounts of bicarbonates in their blood than people working in a clean environment.**

Dr. Gerald Pollack, one of the premier water experts in the world, stresses the importance of pH in the cells. pH means everything to a cell's water life. "Turns out that the thickness of water depends on the pH. If you increase the pH, we found that regions of structured water get thicker." Part of this book is dedicated to pH Medicine because so much of cell physiology is dominated by pH. *Sodium Bicarbonate* is the incredible medicine it is precisely because it so easily turns into CO_2. Just add stomach acid or lemon in a cup of bicarbonate water and watch the bubbles form.

Low carbon dioxide levels (low bicarbonates in the blood) are life threatening but usually in a backhanded way. When we are low in CO_2 (from breathing too fast or lack of exercise) we are low in O_2 because of negative changes in the oxygen disassociation curve, which has everything to do with how oxygen jumps on and off red blood cells.

According to Annelie Pompe, a prominent mountaineer and world-champion free diver, alkaline tissues can hold up to 20 times more oxygen than acidic ones. We really have no reference in the medical literature to sustain these numbers, but we do know that acidic conditions (below pH of 6.5-7.0) make cells lose their ability to exchange oxygen, which cancer cells happen to love. Researchers have found that an increase of 1.2 metabolic units (oxygen consumption) was related to a decreased risk of cancer death, especially in lung and gastrointestinal cancers.

Acid pH is measured in terms of positively charged hydrogen atoms. Molecular hydrogen, on the other hand, is neutral and, because of its lack of charge, can penetrate cells and every nook and cranny of the body more easily than the much smaller electrons. Electrons carry a charge, which cells walls resist.

Sick people tend to be low in CO_2/bicarbonates and thus in oxygen:

· We are a global society of shallow breathers, lacking exercise and stimulation of our respiration, circulation and detoxification systems. This results in the degradation of the quality of our lives and health.

· Lack of oxygen in the body is the root cause of a multitude of maladies, including pain and inflammation. Diseases thrive in oxygen poor environments.

· Cancer thrives in oxygen poor environments.

· Humans need oxygen to provide nutrients and energy to all of the cells in their bodies. 99% of diseases cannot live in an oxygen rich environment.

One of the most instant and inexpensive ways to alkalinize the body is to administer sodium bicarbonate; which instantly turns to CO_2 in the stomach driving bicarbonates into the blood. It also raises O_2 levels because alkaline tissues and fluids retain and utilize more oxygen.

A second way would be to slow the breathing down by using the Frolov breathing retraining device. This too would raise CO_2 levels dragging O_2 up with it. Later chapters delve deeply into the world of carbon dioxide and its close relationship with oxygen. Other chapters deal extensively with healthy breathing, which is more important to health than most realize.

At the State Institute of Further Medical Education, in Kiev in 2001, researchers showed that elimination of hyperventilation and hypocapnia (low CO_2 levels) in patients with breast cancer, after the completion of the special treatment, led to increased three-year survival rate and a better quality of life. This included a released fear of unfavorable outcomes of the treatment, improved working ability, easier social adaptation and relief of edema of the upper extremities.[viii]

Combining Hydrogen with Oxygen

"Molecular hydrogen therapy combined with oxygen therapy or fluid resuscitation can reduce oxygen free radical damage, the amount of fluid and vasoactive drugs, and the overload of liquid. As a result, molecular hydrogen therapy may reduce the complications of oxygen therapy and fluid resuscitation." [ix]

The basic practice put forth in this book is to combine molecular hydrogen gas with oxygen, in addition to increasing CO_2/bicarbonate levels in the blood. It would have

been medically bold enough to present *Hydrogen Medicine* as a new breakthrough in medical science but to do it in the context of other gases offers a quantum leap in medical practice. Talking about all three gases at once, because they are inseparable, will stretch medical minds in new dimensions.

Drs. from China have found:

> Hyperbaric oxygen (HBO) therapy through breathing oxygen at the pressure of above 1 atmosphere absolute (ATA) is useful for varieties of clinical conditions, especially hypoxic-ischemic diseases. Because of generation of reactive oxygen species (ROS), breathing oxygen gas at high pressures can cause oxygen toxicity in the central nervous system, leading to multiple neurological dysfunctions, which limits the use of HBO therapy. The data showed that H_2 promoted the cell viability and inhibited the damage in the cell and mitochondria membrane, reduced the levels of lipid peroxidation and DNA oxidation, and selectively decreased the levels of OH. These results indicated that H_2 effectively reduced OH, protected cells against oxygen toxicity resulting from HBO therapy, and had no effect on other ROS.[x]

Everything a doctor is trying to achieve with their patients no matter what the condition will be facilitated with these gases administered in combination. This is easy to do with a hydrogen inhalation machine that is designed to administer both gases. Just add carbon dioxide delivered through oral administration and transdermal baths of sodium bicarbonate as well as using a breathing retraining machine. You can now enjoy and benefit from the best medical science can deliver right in the comfort of your own home.

[v] "At the end of the 19th century, scientists Bohr and Verigo discovered what seemed a strange law: A decreased level of carbon dioxide in the blood leads to decreased oxygen supply to the cells in the body, including the brain, heart, kidneys, etc. Carbon dioxide (CO_2) was found to be responsible for the bond between oxygen and haemoglobin." - Dr. Alina Vasiljeva and Dr. David Nias. The Bohr Effect was first introduced, describing the oxygen-binding affinity of the hemoglobin as inversely proportional to pH and the concentration of carbon dioxide. In practice, this means that if the carbon dioxide concentration increases somewhere in the body, the hemoglobin molecule will bind to oxygen with lower affinity; therefore, a larger amount of oxygen is released to the area concerned.

[vi] Hong Y, Sun LI, Sun R, et al. Combination therapy of molecular hydrogen and hyperoxia improves survival rate and organ damage in a zymosan-induced generalized inflammation model. Exp Ther Med. 2016 Jun;11(6):2590-2596.

[vii] Journal of Gerontology. BIOLOGICAL SCIENCES, 1996, Vol. 51A. No. 1, B91-B99

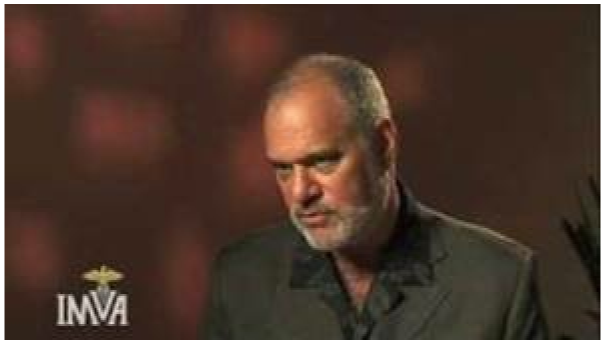
University of California, San Francisco

[viii] S. N. Paschenko, Zaporozhsky State Institute of Further Medical Education, Zaporozhie, Ukraine Oncology (Kiev, Ukraine), 2001, v. 3, No.1, p. 77-78. The PDF file of this article (in Russian) is available at http://www.oncology.kiev.ua/archiv/9/s_9_020.php.
Or read the translation at: http://www.normalbreathing.com/diseases-cancer-1-clinical-trial.php

[ix] Journal ListOxid Med Cell Longevv.2016; Oxid Med Cell Longev. 2016; 2016:

[x] PLoS One. 2017; 12(3): e0173645. Hydrogen gas alleviates oxygen toxicity by reducing hydroxyl radical levels in PC12 cells

Note from the Author



I want to tell you why I wrote this book. I had been taking hydrogen water tablets for about two years and went as far as buying an early prototype hydrogen water machine, that is presently sitting on the top of a closet. I also have a classic water ionizing machine sitting right next to it. In 2017 I started hearing about hydrogen inhalation, but I resisted researching into another medical device that could set my readers back several thousand dollars. Now I cannot imagine being without one for it is the most powerful therapy I have found in all my years of research and experimentation.

Reading the hundreds of studies, working with patients with cancer and receiving other peoples' testimonies was all the fuel I needed to take off like a rocket into the exciting new world of medicine that puts hydrogen as high up as it does oxygen.

In this chapter I will share four key testimonies that moved me. They helped shape my thoughts for what is possible with hydrogen. They are astonishing medical stories but the best one is when you have your own, or one from a dear loved one, who you get to keep in your life. Hydrogen Medicine is going to save a lot of lives because the sicker one is the better it will work.

When I received my own inhalation machine, my own experience sustained the truth of what I present in this book. It all boils down to one fact of life; hydrogen is the foundational stone of every corner of our universe and is a foundation stone for the future of modern medicine. It will change everything, even how oxygen is delivered. In the future the only reason for oxygen concentrators will be to run EWOT (Exercise with Oxygen Therapy) for in all other operations it will be a hydrogen oxygen generator that patients will use.

The first person I recommended a hydrogen inhalation machine was Allison.

Making Medical History with Alison



"The quest for a health is a natural human response to illness, but medical history provides plenty of reason to think twice before you try that miracle cure," writes Time Health. It is true; the cure for disease is health so the obvious key to recovery from cancer and other diseases is to employ life giving healthy substances, not poisons that do much more harm than good.

Perhaps every great physician has had a great patient that makes him a great physician. I have had some interesting cases through the years and I even brought myself back from the edge of life to reasonable health and high levels of creativity.

The most dramatic medical cases are the ones where death is imminent. In these cases when a patient is not only saved but brought back to shining health we can rejoice. When we achieve such medical heights and do it by employing solid medical science, using medical gases and necessary natural substances, we have a chance of turning the practice of medicine in a new direction.

My Natural Allopathic protocol is extremely powerful in reaching into the cells with a life force that comes from a wall of oxygen, hydrogen and CO_2. These gases descend on the capillaries, joining up with magnesium, selenium, iodine and other powerful medicinals to do a dependable and replicable job.

A few weeks ago, I published a story about Alison, a late stage cancer patient who has made a remarkable recovery, one which is still in progress.

"I had a mastectomy back in 2010 at UC Davis Hospital, as I was diagnosed with DCIS on the left breast. They told me it would never ever come back! Surprise! It came back not only across the left breast but into the chest wall as well. I did all the chemo and the 33 rads suggested as treatment. Then about 9 months later UC Davis checking on a thyroid cyst saw enlarged lymph nodes in mediastinum. I went to Reno and did low dose chemo and the Xeloda. When I read Dr. Sircus' book, *Sodium Bicarbonate Rich Man's*

Poor Man's Cancer Treatment, I immediately did more research on him and started using his full protocol. At the time I was walking, swimming, cooking, and doing everything a normal mother does. But within two weeks I discovered the cancer had already spread to my brain."

On the 9th of September 2017: "I spoke with Dr. Sircus because I could not keep food or water down and I began walking like a crab. After a few visits to the ER, I found out I had a tumor on the cerebellum that was blocking fluid from draining down the spinal cord. I urgently Skyped Dr. Sircus and informed him of the dire situation. He was very concerned about what was happening and quickly changed the protocol to help me be able to recover from this new development. Due to my critical condition, Dr. Sircus added hydrogen tablets along with a hydrogen inhaler. Every so slowly, I stopped vomiting, my walking began to stabilize, I gained weight, and I even began to feel normal."

Allison J.

On the 26th of September she wrote, "So I walk now! Eat like crazy, gained 10 pounds, and feel better every day. Don't drive yet but I walk in the neighborhood. Not far. Have not thrown up. Feel stronger ever day! Just hope to keep going!"

On October the 4th she wrote, "I continued with the protocol having added the hydrogen tablets and hydrogen inhalation and within a week all the nausea, vomiting, crab walking, neck stiffness, brain fog faded and better, my memory started returning. I had better skin color and even the whites of my nails are returning. My body is feeling so much stronger. When I switched up my protocol to include the hydrogen I was like a fish. My daughter had to stick with me while I was in the bathroom and dry me, cloth me, and walk with me. I was bedridden. I just can't believe the change in me with the hydrogen. I can now do things on my own when two weeks ago I felt like I was dying. I am walking in the neighborhood, stationary cycling. I normally weight about 106 at 5 foot. So at the time of ER 84. Now back to 96. This is a whole turn around mentally, physically, and emotionally. My face was thin and drawn with dark circles, wrinkles and now my face is starting to fill in. The bruises under eyes are greatly improved.

On October the 10th she wrote, "I am feeling better each day, certainly more cognitive, better movement, more functional, more in the moments, more alive!"

On the 17th of October she wrote, "I am doing great! However, I was very bad today! The problem is I have gained too much weight for my clothing! I went shopping today with my friend because my pants are too small! I can't fit in my clothing anymore! Then,

we went to lunch. I have been out all day enjoying myself. Happy now because I have clothes that fit!"

Allison is using the Breathslim, which is now going back to its original Russian name, the Frovlov device, 4 hours a day with the hydrogen. She says, "It is a lot of work slowing my breath down. However, I can feel my oxygen intake increase as well as lung capacity. Counting breaths now without using the Breathslim is 12 but it was 15 when I started."

Alison's reported protocol:

> 20 drops of Selenium Tung Oil (Each drop a milligram)
>
> 6 to 8 droppers of iodine (I do not count the drops)
>
> 4 pounds to five of bicarbonate in baths
>
> Half bag of magnesium flakes in bath
>
> Mag spray on body and mouth
>
> 20,000 units of Vitamin D
>
> Health protector (Vitamin C) 12
>
> Vital Reaction Hydrogen tablets 12
>
> Inhaler 4 hours

On the 27th of October Alison wrote:

I have no desire to nap anymore.

I have not used my asthma inhaler.

Cleaning house, feeding dogs, laundry

My nose used to be running all the time stopped.

Walking, driving, shopping, and getting frustrated that the kids for leaving messed.

Walking in the neighborhood people look at me because the kids told their friends I was very sick, so they are surprised I am walking around. They stop to tell me I look good.

Combination Hydrogen and Oxygen Testimony



"I started drinking hydrogen and oxygen (HydrOxy) water in 2005. Eventually in March of 2016, I started breathing HydrOxy for several hours each day while working at the computer. After several months, I felt rejuvenated by one year for every month that I inhaled the gas."

"I just had a very interesting thing happen to me. I was recently pounding down a steel post with an improvised post pounder and sprained my shoulder bad. I couldn't lift my arm without severe pain. Then something amazing happened. My shoulder sprain healed in three days! I've never had a sprain heal that fast!"

· My eyesight has improved. I've worn glasses since 9 years old. I don't wear glasses
anymore except when driving.
· My psoriasis is gone; no more thick white pealing skin on elbows, knees and feet. This actually happened within three weeks of my starting to breathe HydrOxy
· My skin is smooth and supple, with age wrinkles gradually disappearing.
· My scars (I've had since childhood) seem to be disappearing.
· My 'age spots' are disappearing.
· My neuropathies are gone. I'm grateful to feel my left hand and shins again.
· My hair continues to darken (now salt and pepper instead of straight grey).
· My hair seems to be growing back (thickening and growing on my bald top).
· My tinnitus is still there but barely noticeable occasionally."

· I'm losing fat and gaining muscle even without dedicated exercise.

He updated this in October 2017:
· My warts are gone (hand warts and planter's wart)
· My hair is definitely growing back

· My constipation is gone
· My arthritis is gone
· I still haven't been sick (not even a sniffle) since 2005 (NO drugs or flu shots)
· I've lost 40 excess pounds (down to 180 from 220)
· My heart murmur is gone. George Wiseman

Saving a Life with Hydrogen and Oxygen



This story took place in the hills of New Jersey, outside of New York City, on Sunday, August 28th, 2016 written by Ed Wunder.

After receiving an email that someone was in danger of death, the assistance of a hydrogen oxygen (HydrOxy) gas generator was offered to a man's wife, who happens to be a medical doctor. She accepted, and we arranged a time to bring the machine over.

10 hours were spent that day at that home. This man spent 9+ hours inhaling HydrOxy gas through a nasal cannula -and the most remarkable changes transpired during that time.

Upon arrival, he did in fact appear to be very close to death. I honestly thought I was too late to make a difference; his condition was that severe. He was ashen, largely unresponsive (in and out of consciousness), mouth-breathing, had started to have difficulty swallowing (a common occurrence with dying patients), and was not eating anything. His wife told me later that evening that when I arrived she had been thinking he wouldn't live another 24 hours.

I hooked him up to the HydrOxy with the nasal cannula right away, although his mouth-breathing gave me pause that he might not be getting the full benefit. We encouraged him to breath in through his nose and out through his mouth as much as possible. It wasn't long before I noticed that his breathing began to deepen. Gradually but perceptibly, color started to return to his cheeks and forehead. His wife and I watched him very closely, although her emotional involvement may have kept her from observing the subtle changes I was beginning to notice - at one point she said she wasn't seeing much difference.

Only after he said he needed to use the toilet and propelled himself on a rolling chair to the bathroom (locomotion had been drastically limited for several days at this point) did she acknowledge there had been an obvious and undeniable turnaround — and she gave me a big hug and said, “You saved his life!” He came out of the bathroom saying he wanted to go to bed and proceeded to head up the stairs by himself. Knowing his weakened condition, I was concerned he might fall and I encouraged his wife, momentarily frozen in disbelief by this drastic change, to accompany him in case he got wobbly.

Once she got him into bed, she asked to have him connected to the hydrogen gas again. As he continued breathing with the nasal cannula, his improvement was such that we actually felt comfortable asking the housekeeper to keep an eye on him while we went to get some supplies. As you might expect, we called the house several times while we were out, and we learned that he was not only doing well, he had gotten himself out of bed to use the bathroom again, and when he returned he had the presence of mind to re-install the nasal cannula himself!

Upon our return the color and tone of his skin - face, chest and body - was markedly better, his extremities were warm, and he was quite lucid...even gave his wife a kiss. He was able to drink 8 oz. of soup broth, the first nourishment he had taken since I arrived.

By now his wife wanted to know if he could leave the inhaler on all night. I saw no reason why not, as long as she would be sleeping by his side.

Nothing in the medical literature advises against breathing this gas for prolonged periods, and, in fact, argues that more is better. In medical studies conducted by doctors in Asia, Molecular Hydrogen seems to be one of those rare applications that fit the expression “more is better!” Knowing that he would be monitored by an MD, I could see no reason to curtail what was clearly not harming him. At that point, he had been inhaling Molecular Hydrogen for a good 8.5 hours almost continuously.

A wonderful thing happened that day. And thanks to a relatively unknown (in the United States) technology, this man was no longer at death's door - he was thriving.

Regrettably, this man has since passed away, but lived another 6 months, after he received help from the HydrOxy.

The Fantastic Story of Andrea



February 15, 2018



March 15, 2018

Not everyone is trained to see changes in physiognomy, which is the assessment of character, personality and health from a person's outer appearance, especially of the face. For me the above pictures clear enough to melt my heart.

The following testimony is exciting for cancer patients who have suffered through chemo and radiation therapy, those lucky enough to survive.

> "Almost one month of use of the hydrogen inhaler and I can't express my gratitude and satisfaction. I feel so lucky to have such a powerful, effective machine. I have noticed a hundred percent turn around in my life. From appetite, to sleep, to skin, to breathing, you name it, everything has improved in my life. I feel like each day my body is getting stronger and stronger and reversing damages done from chemotherapy and radiation I had received last year. I had breast cancer that had spread to my lungs, and recently started

doing Dr. Sircus cancer protocols in addition to the hydrogen machine and it's only been over a month and I feel healthier than I have in my whole life. I used to have discomfort in my lungs but since using the machine especially, I virtually have no symptoms. My energy level is high and most of all I am feeling stronger and stronger each day. I can't imagine what will happen after 6 months or even a year of using the hydrogen machine. I am recommending it to friends and family with all sorts of ailments, and I have no doubt this machine will reverse anything they are dealing with and greatly improve their quality of life. I can't express my gratitude enough to those who took the time to make this available to us, with their purest intention to help facilitate healing. I can only share my story and satisfaction in hopes someone suffering or desperate will find comfort and healing in this machine as well. I know in my heart that the money spent on the hydrogen machine is a drop in the bucket compared to medical bills." Andrea Kaady-Thurman

Andrea wrote, "You have the best cancer protocol I have seen, and I feel sorry for everyone in chemo and radiation. I've never seen a worse hell." Allison from the above testimony finally communicated with me after seeing Andrea's testimony. It is six months since her near death experience, and I was delighted to learn she is just fine.

My Personal Testimony

My own complete testimony will have to wait for the second edition but after only two months on hydrogen and oxygen treatments my face looks younger and softer. I notice the difference when having to stare at myself when doing videos on the computer. In terms of peripheral neuropathy, my long-term damage to my peripheral nerves in my feet, which would often cause weakness, numbness and pain, is about gone. My mind is sharper, I can get my heart rate higher, and I do not feel pain or tiredness when walking up the stairs. I am 65 and I cannot remember feeling stronger or better. I cannot wait to see the results after six months or a year in terms of the anti-aging properties that hydrogen processes.

Hydrogen is Serious Medicine



Hydrogen gas inhalation is a powerful yet gentle therapeutic process. Conditions improve faster if hydrogen and oxygen are fed continuously. Hydrogen is the ultimate warrior against death and disease and is a perfect partner with oxygen, which itself is a perfect partner with CO_2.

Prof. Masaru Suzuki, from the Department of Emergency and Critical Care Medicine at Keio University Hospital said that, "H_2 will become a gas medicinal product which will have a big impact in the field of **cardiopulmonary resuscitation**. Research is moving fast across the world and it will eventually become a combined international investigation. If this H_2 inhalation therapy works with cardiopulmonary arrest, it would mean that **even under the most severe conditions this treatment is effective**. I think the potential for H_2 in medical uses will spread endlessly on the back of this medical research."

In a study published in the Journal of Stroke and Cerebrovascular Diseases, Hydrogen Gas Inhalation Treatment in Acute Cerebral Infarction was safe and effective. These results suggested a potential for widespread and general application of H_2 gas.[xi] The medicinal value of hydrogen was ignored prior to research illustrating that inhalation of 2% H_2 can significantly decrease the damage of cerebral ischemia/reperfusion caused by oxidative stress via selective elimination of hydroxyl freebase (OH) and peroxynitrite anions ($ONOO^-$).



Hydrogen promotes survival of retinal cells. The results of one study demonstrated that post conditioning with inhaled high-dose H_2 appears to confer neuro-protection against retinal I/R injury via anti-oxidative, anti-inflammatory and anti-apoptosis pathways. [xii] Hydrogen is a miracle when the only thing your eye doctor can suggest is anti-oxidants and you are going blind.

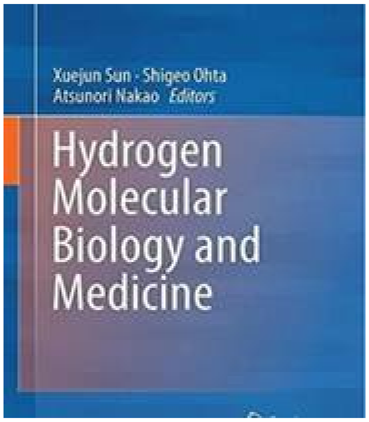
> Bill Johnston writes: "Yesterday I went to my eye doctor. I had told her about molecular hydrogen a few months ago and the relationship between oxidative stresses, the hydroxyl radical, and age - related macular degeneration and glaucoma, cataracts. Yesterday she compared pictures of my retina and was amazed. Not being knowledgeable about the eye, I did not understand the terms she used but I could see that the retina surface was smooth now without an uneven surface. One bump that was obvious had disappeared totally. She wants me to come back in another month as part of a study she wants to write about,"

Visual acuity improved after 3-4 weeks of daily inhalation.

> "I did some testing with my vision. I am able to read everything. I haven't been able to see at this level since I was in my late 20's or early 30's. I am 53 right now. This is amazing.
>
> The ONLY thing that I changed in my life is daily inhalation of the gas. The bubbled water did NOT do this, as I have been drinking that daily for six months - and only recently did things improve to this level. I've been doing 1/2 hour to 2+ hours daily.
>
> Ed Wonder writes: "As you age, your ability to see up-close diminishes because of lens hardening. However, I was at the point where I couldn't focus because it was too close - and then when I moved it outward to get it into a focus-able

range, it was too small. Catch-22 on the vision. Also, reading around a bottle was difficult because of the different planes of distance involved. That is gone, and I can read around bottles, at a comfortable distance, without the Catch-22 mentioned earlier. After 4 weeks of inhalation, my wife was able to get rid of her reading glasses completely, as well,"

Hydrogen is effective in terms of its power to bring people back from the edge of death like magnesium does when a person is experiencing cardiac arrest. What magnesium does for the heart in such moments hydrogen, when taken orally and by inhalation simultaneously, can do the same as magnesium for any distressed part of the body or body parts being eaten alive by cancer.



Drs**. Sun, Ohta,** and **Nakao,** in their book *Hydrogen Molecular Biology and Medicine*, the first of its kind, write, "Inert gases are not useless or dispensable for human survival; instead, they are indispensable components of the gas medium to maintain life. To maintain the oxidation-phosphorylation energy metabolism, which is essential to life, the inhaled gas must contain a certain proportion of oxygen. But if the partial pressure of oxygen is too high or even pure oxygen, then it will cause damage to the body or even death since the presence of excessive oxygen is toxic to the body."

These doctors go on importantly to say: "According to the research, hydrogen shows a protective effect in multiple diseases. For instance, malignant carcinoma, colitis, encephalopathia after carbon monoxide poisoning, cerebral ischemia, senile dementia, Parkinson's disease, depression, spinal injury, skin allergy, diabetes type 2, acute pancreatitis, organ transplantation, intestinal ischemia, systematic inflammation reaction, radioactive injury, retina injury, deafness, etc."

These doctors affirm that because the molecular weight of hydrogen gas is low, the permeability of hydrogen gas is very strong. "It can penetrate rubber and latex tube at room temperature and can penetrate metal films such as palladium, nickel, and steel at

higher temperatures." So, we can imagine hydrogen spreading throughout your body getting to every cell and especially to those areas that most need the healing power of hydrogen.

The more difficult or dire the medical circumstance the more helpful hydrogen seems to be. Hydrogen is perfectly suitable for intensive care wards (ICUs) and emergency rooms where medicines must act fast. According to the above authors, "The acoustic speed of hydrogen is fast. Under standard condition the acoustic speed of air is 331 m/s, helium's acoustic speed is 972 m/s, while the acoustic speed of hydrogen is 1286 m/s."

Molecular hydrogen, contains two protons and two electrons, is neutral, and so it does not take up as much space electromagnetically as negatively charged electrons. This means molecular hydrogen slips into cells more easily than the much smaller electrons. Cells resist any charge but not hydrogen, which is neutral., So the small neutral molecules of hydrogen get into the cell and mitochondria with ease and speed where they do a whole lot of good.

Hydrogen healing molecules easily come to the rescue, riding in on ultra-fast horses. Hydrogen is responsive; it is chemically active as well as energetic and will move like lightening in emergency situations, especially when one combines inhaled hydrogen gas with hydrogenated water.

[xi] Hydrogen Gas Inhalation Treatment in Acute Cerebral Infarction: A Randomized Controlled Clinical Study on Safety and Neuroprotection. http://www.sciencedirect.com/science/article/pii/S105230571730294X

[xii] Wang R, Wu J, Chen Z et al. Post conditioning with inhaled hydrogen promotes survival of retinal ganglion cells in a rat model of retinal ischemia/reperfusion injury. Brain Res. 2016 Feb 1;1632:82-90.

Hydrogen the Fuel of Life



Hydrogen is the most abundant element in the universe, so there's no possibility of human consumers depleting the supply. There are certainly enough oil resources to meet global demand now, but many energy experts predict that the world's supply of oil will be depleted within 60 years or sooner. Hydrogen will save the world in terms of energy and it will save the world of medicine.

According to astrophysicist David Palmer, about 75 percent of all the known elemental matter that exists is composed of hydrogen. The nucleus of a hydrogen atom is made from a single proton, which is a positively charged particle. One electron orbits around the outside of the nucleus. Neutrons, which can be found in all other elements, do not exist in the most common form of hydrogen.

The sun generates its energy by nuclear fusion of hydrogen nuclei into helium. In its core, the sun fuses 620 million metric tons of hydrogen each second. Of course it is not that simple. However, the point is that hydrogen gives life to our sun and all suns leading to the spreading of light all over the universe.

Hydrogen is at the Root of Creation



That image is through a good telescope with the star in the middle being the closest one. In reality there is no darkness in space it is full of light, but we cannot see it-it looks black. If we could see it, it would burn our eyes out. And we are that light. We absorb light and re-radiate like stars and hydrogen is always at the heart of it all.

The first scientist to talk about hydrogen was Dr. Szent-Györgyi who won the Nobel Prize for discovering Vitamin C and its ability to cure scurvy in 1937. He also won a Nobel Prize for his work identifying the reactions that liberate energy from hydrogen. He explained one of the basic principles of biology: hydrogen and oxygen interact in a delicate balance releasing energy delivering it to cells in tiny portions.

Dr. Szent-Györgyi said: "Hydrogen is, in fact, the only fuel the body knows. The foodstuff, carbohydrate, is essentially a packet of hydrogen, a hydrogen supplier and hydrogen donor, and the main event during its combustion is the splitting off of hydrogen. So the combustion of hydrogen is the real energy-supplying reaction."



He insisted that hydrogen was the fuel of life. Everyone knows we need oxygen to live, but oxygen's counterpart (hydrogen) is the real fuel that burns when there is plenty of oxygen around. Today we are finally seeing hydrogen as a clean burning fuel for our cars.

https://www.youtube.com/watch?v=SrgQ65UsbZ0

In this video we see robot bees can now dive in and out of water using tiny combustible rockets run on hydrogen and oxygen that is taken right out of the water they dive into. Gas fills a chamber in the RoboBee's interior, it's lit by an internal spark, and woosh, it shoots out of the water. What's cleverest about this system is that it actually uses the water as fuel. A pair of tiny electrolytic plates convert the liquid into hydrogen, which can then be ignited providing rocket like thrust.

The next generation fuel cell propulsion system announced recently delivers a number of important advances: increased power density, reduced cost, resulting from a combination of a new one-step fuel-cell stack sealing process; and extended lifetime. The increase in rated power, without any appreciable increase in size or weight, is a particularly significant development. In addition, these new type of fuel cells offer a 3x increase in mission drone flying time compared to battery-powered drones.

Hydrogen is the best and most efficient energy carrier ever. It has the largest amount of energy by weight out of every other combustible gas. Every fuel, be it diesel, gasoline, natural gas, propane, butane, etc. are all carbon chains of a certain length linked together by hydrogen atoms. The length of the chain determines the name and fuel type. Used in

conjunction with gasoline in your vehicle, hydrogen can act as a catalyst that optimizes combustion and results in cleaner emissions, reduced fuel costs and reduced oil maintenance.

Water has both the fuel (hydrogen) and oxygen, which provides the fire of oxidation. The word hydrogen comes from the Greek, meaning "water-former." Water is formed when hydrogen is burned (oxidized) by oxygen. It is created every day in our bodies as we burn hydrogen to create ATP. Hydrogen and oxygen participate in a continuous cycle that generates both water and energy.

"**The oxidation of hydrogen in stages seems to be one of the basic principles of biological oxidation**. The reason for this is probably mainly that the cell would not be able to harness and transfer to other processes the large amounts of energy, released by direct oxidation. The cell needs small changes if it is to be able to pay for its functions without losing too much in the process. So it oxidizes the H-atom in stages, converting the large banknote into small change," writes Szent-Györgyi.

Szent-Györgyi was the first to show that the human body stores hydrogen in many of its organs. He called this 'hydrogen pooling' and he identified the liver as the organ that pools the most hydrogen because it requires hydrogen to neutralize free radicals produced during detoxification. This is what hydrogen does best-neutralize free radicals and combine with them to turn them into water.

Food is a primary source of hydrogen. If it is fresh and uncooked it provides an abundance of hydrogen. The hydrogen in food is tied up in complex molecules that have to be metabolized (broken down) to release the hydrogen. The air we breathe also contains a small amount of hydrogen, which is immediately absorbed into cells and tissues the moment it enters the respiratory tract. The amount found in the atmosphere is less than 1%, so that really is not enough to make up the difference if we are deficient.

The Miracle of Molecular Hydrogen



Seduced by simplicity, physicists have always found themselves fascinated by hydrogen, the simplest of atoms, which can combine to form the simplest molecule. Hydrogen has shocked, it has surprised, it has embarrassed, it has humbled - and again and again it has guided physicists to the edge of new vistas of thought. Now it is time for hydrogen to do its magic in the field of medicine where it will be used to treat traumatic injury, neurodegenerative disease, inflammatory disease, organ transplantation, metabolic syndrome, diabetes mellitus, sepsis, burn wounds, adverse reactions after chemotherapy, radiation-induced injury, hearing disorders, and preeclampsia.[xiii]

Molecular hydrogen has anti-oxidative and anti-inflammatory activities and neuroprotective effects.[xiv] We see increases in the level of the anti-oxidative enzyme superoxide dismutase (SOD) with hydrogen intake.[xv] Hydrogen-rich saline prevents Aβ-induced neuroinflammation and oxidative stress, which may contribute to the improvement of memory dysfunction in animal studies.[xvi]

Looking just to the effects of Molecular Hydrogen we see:

· Neuro-protective

· Improves mood disorders

· Reduces muscle fatigue, motor deficits, and muscle degeneration

· Prevents metabolic syndrome, decreasing levels of glucose, insulin and triglycerides: can treat diabetes

· Antioxidant: prevents brain damage

· Anti-inflammatory

· Protects all organs

· Lowers cholesterol and blood sugar

· Assists in weight loss

· Enhances mitochondrial function

· Has been shown to prevent cancer by reducing oxidative stress and suppressing tumor colony growth

· Has been shown to reduce side effects of cancer treatments

· Boosts skin health

· Enhances wound healing

· Limits damage of transplant organs

· Improves bladder dysfunctions

· Is cardio-protective

· Protects and rebuilds eyes and vision

· Prevents hearing loss

· Combats allergies

· Ameliorates kidney disease

· Protects the liver

· Promotes gut health

· Protects the lungs

· Protects from radiation-induced damage

· Relieves pain

· May prolong lifespan

· Is antibacterial and promotes oral health

· Is non-toxic at high concentrations

Millions of individuals are not getting enough hydrogen (and are suffering for it) because of mineral deficient soil, pesticides, chemical fertilizers, over-processing of foods, the addition of chemical preservatives, and drinking over-chlorinated and over-fluoridated water.

When certain chemicals in the body lose an electron, they become positively charged (and are called "free radicals" or "oxidants"). These chemicals roam freely throughout the rest of the body stealing electrons from other cells. Free radicals damage cellular DNA. The majority of modern science has come to the conclusion that free radical damage in the human body is the cause of aging. Aging is evidence of the damage to millions of the body's cells through oxidation. This oxidation is due to the **lack of available hydrogen anions to stop free radical damage**.

Healing Power

Molecular hydrogen is seen to be effective for Rheumatoid arthritis (RA), which is a chronic inflammatory disease in which the progressive destruction of joints cause morbidity. It is also associated with an increased risk of atherosclerosis, which can result in cardiovascular disease and mortality. The therapeutic goal is to **control systemic inflammation** to obtain not only the remission of symptoms, but also improve one's general state of health. Consumption of water with a high concentration of molecular hydrogen (4-5 ppm in the water) significantly improves the effects of disease and reduces oxidative stress in RA.[xvii]

Oxidative stress associated with the production of Reactive Oxygen Species (ROS) has been well documented to underlie the surge in pro-inflammatory molecules and mitochondrial DNA damage apparent in disease; which includes cancer, cardiovascular disease, arthritis, neurodegenerative disease, and aging. Higher levels of hydrogen have been shown to protect DNA against oxidative damage by suppressing single-strand breakage of DNA caused by ROS; to protect against oxidative damage to RNA and proteins, and to **enhance the anti-oxidizing activity of ascorbic acid by threefold** - a factor crucial in avoiding the pro-oxidant risk of administering a high dose

of ascorbic acid. Making any vitamin C therapy more effective.

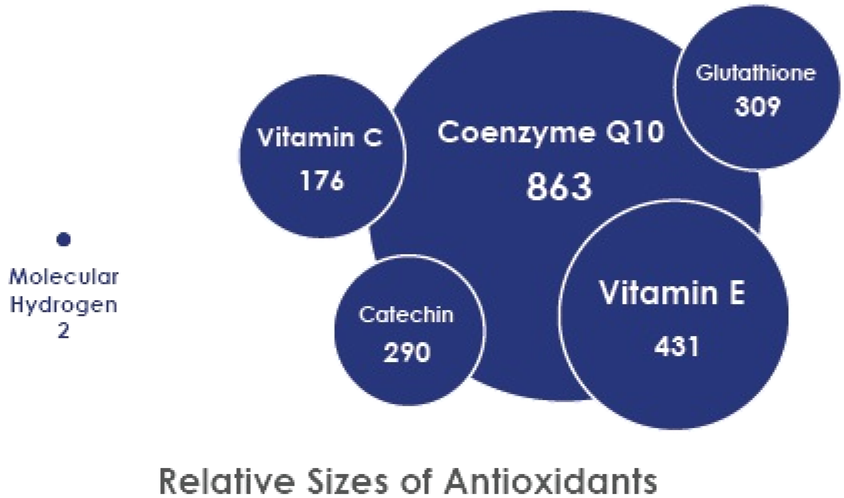
The vast majority of animals and plants are able to synthesize vitamin C, through a sequence of enzyme-driven steps. However, some animals, including guinea pigs and humans, lack the enzyme that is required in the last step of vitamin C synthesis. These species are able to survive with the lower levels available from their diets by recycling oxidized vitamin C. Animals that have the enzyme needed to synthesize vitamin C do not have the ability to recycle oxidized vitamin C.

Thus, for us humans, having a supplement that provides molecular hydrogen in high quantities is going to extend our stores of Vitamin C. This is life enhancement at its best. Molecular hydrogen will create a feedback loop and an updraft that lifts the activity of all antioxidants because an adequate supply of vitamin C enables the regeneration of vitamin E and other antioxidants in the body.

Interestingly, water, which is essential to life, is formed by the combination of oxygen (a powerful oxidizer) and hydrogen (a powerful reducer). It makes sense that molecular hydrogen has high-powered therapeutic potential, as does water itself. Hydrogen is a novel and innovative therapeutic tool. It can be used like intravenous vitamin C therapy except it is far less expensive, and can be used around the clock. With an inhaler one can pour hydrogen into the body directly through the lungs.

With every sip of hydrogen water our bodies are flushed with trillions of hydrogen molecules. H**2** is an effective molecule to scavenge or pair up with toxic hydroxyl radicals in the body that need to be neutralized. Hydrogen therapy is safe and there is no upper limit of use. The more water you drink infused with hydrogen the better, especially if you have late stage cancer and need to turn things around quickly.

There is no toxicity to H2 because the by-product of the free-radical neutralizing reaction is water. Each molecule of H2 will neutralize 2 hydroxyl radicals into two molecules of H2O, hydrating your cells in the process. Hydrogen water at a concentration of 1.6 mg/L would have more "antioxidant" molecules than 100 mg of vitamin C, as there are more total molecules in 1.6 mg of hydrogen compared to 100 mg of vitamin C.

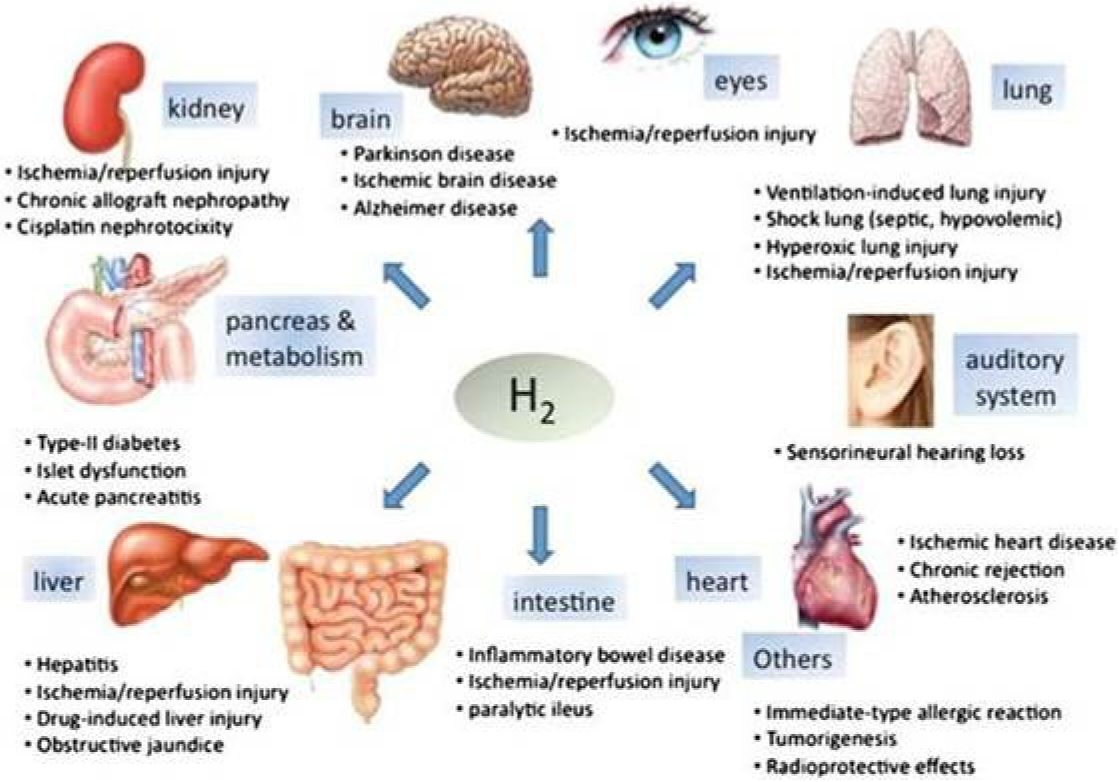


http://primoh2.com/molecular-hydrogen-101/

Molecular hydrogen is a medical leap that is going to help many people. Studies have confirmed that consumption of hydrogen reduces oxidative stress in a diverse range of disorders and organ systems including the digestive, cardiovascular and respiratory systems. There are hundreds of scientific publications that show molecular hydrogen to be therapeutic. Even NASA is researching hydrogen water to protect astronauts from radiation during space travel.

Hydrogen is intriguing. As explained by Tyler LeBaron, founder of the Molecular Hydrogen Foundation, hydrogen powers the sun's fusion, it is key to ATP production within the mitochondria, and it is the father of all other elements. Hydrogen, along with oxygen, has been intrinsically involved with evolution of life in both prokaryotes and eukaryotes (e.g. hydrogenases, hydrogenosomes, mitochondria, etc.). The extremes of oxygen and hydrogen provide balance between oxidation and reduction, which is vital to life. **The most important and basic thing to know about** molecular**hydrogen is that it negates the toxicity of oxygen**by combining with free radicals and turning them into water.

Hydrogen in the body is mostly bound to carbon, oxygen and nitrogen. It is part of almost every molecule in your body: DNA, proteins, sugars, and fats. The hydrogen bond - which forms between atoms that "share" a hydrogen atom - is one of the most important interactions that make biological molecules behave as they do. Thus, hydrogen is an important factor in the regulation of physiology.



Because of its small size, Molecular Hydrogen is an ideal antioxidant molecule for oxidative stress in the mitochondria. It is one of the very few, if not the only antioxidant molecules that can reach the inside of the mitochondria. H2 directly protects mitochondria that are exposed to reactive oxygen species.

The nasty hydroxyl radical has an unpaired electron, which turns it into an insatiable whirling dervish that cannot be calmed until it stabilizes itself. Robert Slovak, a hydrogen water quality innovator, says, "It will steal an electron from DNA, cell walls, the mitochondria-and it will damage those when it does."

The anti-oxidative stress effect of hydrogen is reported to occur by direct elimination of hydroxyl radical and peroxynitrite. Subsequent studies indicate that hydrogen activates the Nrf2-Keap1 system.

Acute oxidative stress induced by ischemia-reperfusion or inflammation causes serious damage to tissues. Persistent oxidative stress is accepted as one of the causes of many common diseases including cancer. H2 selectively reduces the hydroxyl radical, the most cytotoxic of reactive oxygen species (ROS), and effectively protects cells; however, H2 does not react with the kinds of ROS which possess physiological roles.

The inhalation of H2 gas markedly suppressed brain injury by buffering the effects of

oxidative stress. Thus, H_2 can be used as an effective antioxidant therapy. Owing to its ability to rapidly diffuse across membranes, it can reach and react with cytotoxic ROS and thus protect against oxidative damage.[xviii]

ROS are involved in metastatic processes including the invasion of cancer cells into surrounding primary tumor sites. Generated ROS regulates tumor progression, indicating that ROS is situated upstream in many signaling pathways, including the pathway involved in metastasis. At tumor sites, large amounts of ROS are produced by activated neutrophils and macrophages in the inflammatory response.

Hydrogen water erases ROS indispensable for tumor cell growth. Scientists who have studied its anti-tumor effects used hydrogen in combination with hyperthermia at 42°C and found it to be potent as an anti-tumor agent.[xix] Therapeutic opportunities of hydrogen increase in the presence of specific catalysts or heat; thus for cancer and other serious diseases it should be used in the context of a full protocol.

Hydrogen, Inflammation and Pain

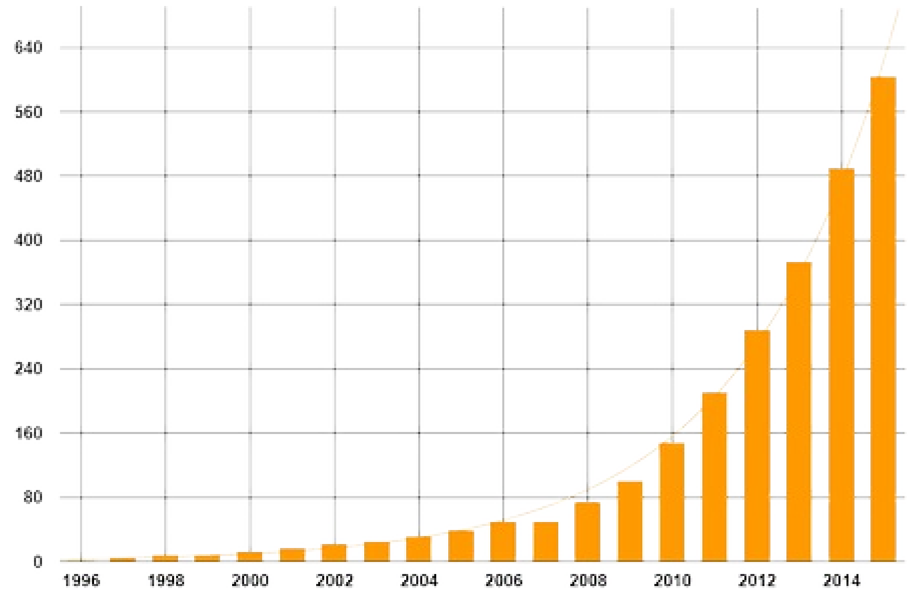
Cells that are repeatedly exposed to inflammatory mediators will have genes that code for inflammatory response proteins switched on, and thus be in a constant state of inflammation. This leads to diseases and health conditions that are strongly linked to inflammation, including asthma and cardiovascular disease. Some of the molecules in the body that can instigate a change in gene expression are: Nf-kB, TNFa, and reactive nitrogen species such as nitric oxide and peroxynitrite.

Hydrogen indirectly affects gene expression through its ability to modulate molecules that have a direct epigenetic effect. Molecular Hydrogen can:

- Impede release of NF-kB
- Reduce TNFa
- Reduce excess nitric oxide
- Scavenge peroxynitrite

Molecular hydrogen has been shown to be an anti-inflammatory in acute conditions, but it is also a potential epigenetic modifying agent for genes that code for chronic pain and inflammation.

Scientific Hydrogen Studies



Therapeutic effects of molecular hydrogen for a wide range of disease models and human diseases have been investigated mostly since 2007. Most studies have been conducted in Japan, China, and the USA. About three-quarters of the articles show the effects in mice and rats. The number of clinical trials is increasing every year. One should take note that almost all the initial research and publications came from Dr. Patrick Flanagan, developer of Megahydrate, who was ahead of the curve in seeing how hydrogen can affect our health.

https://www.youtube.com/watch?v=CboUB_VcTug&t=218s

Hydrogen and Stress

Emotions and stress matter very much in health and medicine although doctors are not trained to help their patients much with these issues. Many have a hard time in recognizing their own stress and the stress in others, so negative emotions continue to cook in the background, ready to explode into disease. There are emotional stresses, physical stresses and chemical stresses. Even gravity is a stress. Any impact from the environment can be seen as a stress. Many people suffer from high levels of sexual stress.

Intense hydrogen therapy (and magnesium therapy) helps reduce the price we pay on a cellular level for the stress we carry around. It is not just the stress from increasing background radiation, vastly expanded radiation exposure to cell phones, Wi-Fi and cell

towers, radiation testing and therapy; heavy metals, antibiotics in our drinking water, fluoride, pharmaceutical drugs, food preservatives, food enhancers like MSG, chemotherapy, heavy metal exposure, pesticide residues in our food; and God knows what else that tears our cells down. It is also the emotional and feeling world of people that is all messed up, contaminated by civilization and the mess mankind has made for itself.

The mechanisms by which a cell dies, that is, apoptosis, necrosis, pyroptosis, or autophagic cell death, often depends on its ability to cope with the conditions to which it is exposed. The adaptive capacity of a cell ultimately determines its fate when it comes under stress. Strength, or what we can call a cell's adaptive capacity, is directly related to nutritional sufficiency and proper cellular respiration which removes all toxins and wastes through the cell wall.

Cells can respond to stress in various ways, ranging from the activation of survival pathways to the initiation of cell death that eventually eliminates damaged cells. Whether cells mount a protective or destructive stress response depends on many factors, but the greatest has to do with nutritional status. A healthy cell naturally chooses life but one that is already chronically stressed due to mineral and lipid deficiencies will have significantly less coping power, less resistance to stress. Other factors in calculating cellular resistance to stress are the nature and duration of the stress as well as the type of cells being affected.

The cell's initial response to a stressful stimulus is geared towards helping the cell to defend against, and recover from, the insult to it. So, it behooves us to maximize the cell's initial defensive response. Both hydrogen and magnesium will do this.

Magnesium and Cell Stress

The involvement of free radicals in tissue injury, induced by magnesium deficiency, causes an accumulation of oxidative products in heart, liver, kidney, skeletal muscle tissues and in red blood cells. Magnesium is a crucial factor in the natural self-cleansing and detoxification responses of the body. Magnesium protects cells from aluminum, mercury, lead, cadmium, beryllium and nickel. This explains why re-mineralization is so essential for heavy metal detoxification and chelation. Magnesium protects the cell against oxy-radical damage and assists in the absorption and metabolism of B vitamins, vitamin C and E - anti-oxidants important in cell protection.

Glutathione requires magnesium for its synthesis. Glutathione requires cysteine, glycine, ATP, and magnesium ions to form glutathione. Magnesium deficiency causes glutathione

loss. This is not affordable because glutathione helps to defend the body against damage from cigarette smoking, exposure to radiation, cancer chemotherapy, alcohol and just about every other kind of toxin. According to Dr. Russell Blaylock, low magnesium is associated with dramatic increases in free radical generation as well as glutathione depletion. This is vital since glutathione is one of the few antioxidant molecules known to neutralize mercury.

Magnesium is correctly called, "The beautiful medicine" by the ancient Chinese, for from a molecular biology point of view the metal is priceless. Most of the hydrogen tablets that make hydrogen water use magnesium as their most active ingredient. In the best tablets one gets 80 milligrams so if we take ten tabs a day we get 800 mgs, which is a healthy amount. This book on hydrogen and other medical gases does not pull into the magnesium port of wisdom overly much, but one should be very clear; when employing medical gases, magnesium should always be included. (For further information about magnesium please see the book *Transdermal Magnesium Therapy*.)

For oncologists it is important to know that magnesium also has a hand in protecting DNA and is a key ion in cell division. Likewise pH control is a key to cellular survival and determines much of a cell's adaptive capacity relative to stress. Iodine, sulphur, selenium and even zinc are not far behind magnesium in relationship to increasing cell strength. Bottom line: Hydrogen and magnesium are like Batman and Robin, inseparable medical super heroes for cell stress and just about everything else.

[xiii] PLoS One. 2017; 12(3): e0173645. Hydrogen gas alleviates oxygen toxicity by reducing hydroxyl radical levels in PC12 cells

[xiv] Molecular hydrogen increases resilience to stress in mice. Qiang Gao, Han Song, Xiao-ting Wang, Ying Liang, Yan-jie Xi, Yuan Gao, Qing-jun Guo, Tyler LeBaron, Yi-xiao Luo, Shuang-cheng Li, Xi Yin, Hai-shui Shi & Yu-xia Ma Scientific Reports 7, Article number: 9625 (2017) doi:10.1038/s41598-017-10362-6

[xv] The Clinical Application of Hydrogen as a Medical Treatment. Acta Med. Okayama, 2016 Vol. 70, No. 5, pp. 331-337. Okayama University Medical School.

[xvi] Brain Research. Volume 1328, 30 April 2010, Pages 152-161

[xvii] Curr Pharm Des. 2013 Oct; 19: 6375-6381. Molecular Hydrogen: New Antioxidant and Anti-inflammatory Therapy for Rheumatoid Arthritis and Related Diseases

[xviii] Hydrogen acts as a therapeutic antioxidant by selectively reducing cytotoxic oxygen radicals Ikuroh Ohsawa1, Masahiro Ishikawa1, Kumiko Takahashi1, Megumi

Watanabe1,2, Kiyomi Nishimaki1, Kumi Yamagata1, Ken-ichiro Katsura2, Yasuo Katayama2, Sadamitsu Asoh1 & Shigeo Ohta1

[xix] Oncol Rep. 2010 Dec;24(6):1463-70. Antitumor effects of nano-bubble hydrogen-dissolved water are enhanced by coexistent platinum colloid and the combined hyperthermia with apoptosis-like cell death. Asada R1, Kageyama K, Tanaka H, Matsui H, Kimura M, Saitoh Y, Miwa N.

Hydrogen for Surgery & ICU



Medical gas is critical to the function of hospitals and many other healthcare facilities. Medical gas systems in hospitals are, in a word, lifesaving. Piped in medical gases, oxygen, nitrous oxide, nitrogen, carbon dioxide, to hospital areas such as patient rooms, recovery areas, operating rooms, and ICU departments is critical to the survival of patients. Now hydrogen needs to be added to the list.

It is imperative that hospitals get with the program on hydrogen because it is a perfect and safe substance to put out the fires of oxidative stress. Evidence of massive oxidative stress is well established in adult critical illnesses; characterized by tissue ischemia-reperfusion injury and by an intense systemic inflammatory response such as during sepsis and acute respiratory distress syndrome. Oxidative stress exacerbates organ injury and the overall clinical outcome.[xx] Oxygen-derived free radicals play an important role in the development of disease in critically ill patients.

"Critically ill patients suffer from oxidative stress caused by reactive oxygen species (ROS) and reactive nitrogen species (RNS). Although ROS/RNS are constantly produced under normal circumstances, critical illness can drastically increase their production. These patients have reduced plasma and intracellular levels of antioxidants and free electron scavengers or cofactors. They also have decreased activity of the enzymatic

system involved in ROS detoxification. The pro-oxidant/antioxidant balance is of functional relevance during critical illness because it is involved in the pathogenesis of multiple organ failure."[xxi] Hydrogen is the gas that directly and immediately addresses critical conditions resulting from massive oxidative stress.

Various studies have suggested therapeutic effects of hydrogen gas in relation to various aspects of emergency and critical care medicine, including acute myocardial infarction, cardiopulmonary arrest syndrome, contrast-induced acute kidney injury, and hemorrhagic shock.



This is an emergency room / ICU / Operation room hydrogen machine. Gas Production Rate: Hydrogen /Oxygen: 3000ml～6000ml/min. Hospitals and the FDA officials might not know it yet but in China they are already producing hydrogen machines perfected to the climate of ICU and operating rooms. Hospitals can afford the 30,000 dollar estimated price and the absolute control gained over the combined gases but vastly less costly units will flood the body equally well with hydrogen.

Hydrogen works fast because of its small size and neutral footprint. "Inhalation of 1-4% hydrogen gas alleviated tissue damage and reduces infarct size. The blood and tissue levels of hydrogen reach saturation within 2 or 3 min after commencing inhalation of hydrogen gas. The gaseous hydrogen level in the blood reaches 16 μmol/L after inhalation of 2% hydrogen gas. Arterial oxygen saturation is not affected because gaseous hydrogen does not bind with hemoglobin, and the blood pressure and pulse rate

are also unaffected under steady state condition. The blood level of hydrogen gas declines rapidly after discontinuation of inhalation because it is excreted by the lungs." [xxii]

This last paragraph is important in terms of dosage and the type of inhalation machine one is looking at. One off hand estimate is that 300ml/min flow of hydrogen at 8 percent concentration saturates the blood in about ten minutes. Once it is saturated it is only a matter of keeping hydrogen levels available for circulation. Hydrogen inhalers that use 99 percent hydrogen will saturate the body even quicker, and though that might be useful at times under emergency situations, it is not necessary nor have any scientific studies been carried out at such high concentrations.

Hard Hydrogen Science

In a rat model of resuscitated cardiac arrest, the survival rate at 72 h after return of spontaneous circulation (ROSC) was only 30% in the control group, whereas it increased to 70% in the hypothermia group and the hydrogen gas group, and was even higher at 80% in the combined group.[xxiii] Combining hydrogen with infrared warming therapies optimizes therapeutic outcomes.

Stroke is a devastating neurological disease and hydrogen has shown promise for these patients as well. By inhalation, hydrogen gas is able to pass the blood brain barrier effectively, leading to improved neurological conditions in variety of stroke models (Ohsawa et al., 2007; Chen et al., 2010; Lekic et al., 2011; Zhan et al., 2012).

"Destructive ROS like hydroxyl radicals are strong oxidants that cause tissue damage, whereas beneficial species like superoxide and hydrogen peroxide enhance endogenous antioxidant mechanisms through signal transduction pathways. A potent antioxidant, such as vitamin C, indiscriminately eliminates both destructive and beneficial ROS, thus failing to suppress the onset or progression of conditions related to oxidative stress. Hydrogen gas is a weak reducing agent, and its oxidation-reduction reaction only occurs with a strong oxidant that causes tissue damage."[xxiv]

"Hydrogen gas inhalation confers resistance to hemodynamic instability caused by massive bleeding. It appears that, when hydrogen gas is administered under circumstances where homeostasis is disturbed, it works on complex networks and restores homeostasis. Endogenous physiologically active gases, such as nitric oxide and carbon monoxide, bind to heme, but hydrogen gas does not."[xxv]

Safer Surgery with Magnesium

Everything in surgery, emergency room medicine and intensive care is facilitated with magnesium. Complications such as arrhythmias, kidney failure, stroke and infections may occur after major surgery. Everyone scheduled for surgery needs to increase their stores of magnesium. In the pre-and postoperative phases magnesium can help alleviate pain, decrease blood pressure, alleviate certain heart arrhythmias; it works to prevent blood clotting, relieves depression so common after bypass surgery, and improves energy and cognitive abilities.

Dr. Sarah Mayhill says, "Magnesium has a thrombolytic (able to dissolve thrombosis) effect, but also protects against adverse effects of stunning. From the mid 1980s there has been increasing evidence that the use of intravenous magnesium, given as early as possible (and before reperfusion) has a major beneficial effect on the outcome of this life threatening situation. Positive studies have shown between a 50% and 82.5% improved survival rate after doses of intravenous magnesium given by drips in the dosage range of 32 - 66 mmol in the first 24 hours."

When magnesium levels are corrected by the administration of magnesium before, during and after surgery, medical complications are significantly reduced to the point where it becomes simply imprudent to perform surgery without it. Dr. Minato at the Department of Thoracic and Cardiovascular Surgery, in Japan, strongly recommends the correction of hypomagnesemia during and after off-pump coronary artery bypass grafting (OPCAB) for the prevention of perioperative coronary artery spasm; and his team have said that they will no longer perform this surgery without its use.[xxvi]

Conclusion

Hydrogen is another substance that will facilitate positive outcomes in ICU and surgery departments as well as in ambulances and emergency centers. In the future it will be a grave error, even malpractice, to not give hydrogen or magnesium in these critical care departments. It should not be a great leap for the medical system to go from giving oxygen in all instances to giving hydrogen and oxygen at the same time.

The high-end hydrogen inhaler featured above would give doctors perfect control over both gases. When it becomes available with FDA approval it will be exactly what is needed in these departments. However, for the patient hydrogen inhalation units need to be used at home, on a daily basis if the full benefits of hydrogen are to be received.

[xx] Free Radical Biology and Medicine. Volume 40, Issue 3, 1 February 2006, Pages 398-406

The role of oxidative stress in adult critical care

[xxi] Crit Care. 2006; 10(5): R146. Oxidative stress is increased in critically ill patients according to antioxidant vitamins intake, independent of severity: a cohort study

[xxii] Acute Medicine and Surgery. Promising novel therapy with hydrogen gas for emergency and critical care medicine

24 October 2017. http://onlinelibrary.wiley.com/doi/10.1002/ams2.320/full

[xxiii] Hayashida K, Sano M, Kamimura N et al. H2 gas improves functional outcome after cardiac arrest to an extent comparable to therapeutic hypothermia in a rat model. J. Am. Heart Assoc. 2012; 1: e003459.

[xxiv] Ohsawa I, Ishikawa M, Takahashi K et al. Hydrogen acts as a therapeutic antioxidant by selectively reducing cytotoxic oxygen radicals. Nat. Med. 2007; 13: 688-94.

[xxv] Acute Medicine and Surgery. Promising novel therapy with hydrogen gas for emergency and critical care medicine

24 October 2017. http://onlinelibrary.wiley.com/doi/10.1002/ams2.320/full

[xxvi] Perioperative coronary artery spasm in off-pump coronary artery bypass grafting and its possible relation with perioperative hypomagnesemia. Ann Thorac Cardiovasc Surg. 2006 Feb;12(1):32-6.

Saving Sepsis Patients' Lives



Are doctors ready to save half a million people a year who die from Sepsis? We now have a game-changer for a condition that occurs in more than 1.5 million people a year in America, with a 28-50% fatality rate, according to the National Institutes of Health. Sepsis rates are even higher in third-world countries.

Science Daily reports, "With infectious diseases, it is often not the pathogen itself, but rather an excessive inflammatory immune response (sepsis) that contributes to the patient's death, for instance as a result of organ damage. On intensive care units, **sepsis is the second most common cause of death worldwide**. In patients with a severely compromised immune system, especially, life-threatening candida, fungal infections represent a high risk of sepsis."

Dr. Paul Marik made headlines across the globe with a sepsis treatment he believes is saving lives. However, he says he must "lie low" about the controversial treatment. Dr. Marik said the response by patients' physicians has been about half and half; some willing to try, and "the other half saying it's complete and utter nonsense." He is administering a common sense basic medicine approach that puts out cysteine storms with IV infusions of vitamin C, hydrocortisone and thiamine.

Vitamin C, Cancer and Oxidative Stress

A research team at the University of California, Berkeley found evidence that vitamin C does significantly reduce levels of oxidative stress, which is associated with a variety of chronic diseases, for people exposed to environmental tobacco smoke. Vitamin C also seems to ameliorate imidacloprid-induced oxidative damage by decreasing LPO (lipid peroxidation levels) and **altering antioxidant defense systems** in the liver.

Vitamin C is an important independent antioxidant with a key role in protecting cells from oxidative challenge, and cell death from oxidative stress. When used in combination with other antioxidants like hydrogen, glutathione, magnesium, bicarbonate and iodine, such a protocol will address the most serious threats of sepsis as well as other life-threatening diseases.

IV vitamin C is a wonderful treatment for people who are close to death. It has the power to bring people back from the brink. Each of the medicinals mentioned above are heavy weight medicines useful in the direst medical circumstances when used correctly. Take vitamin D as an example, probably 200,000 units 50,000 at a time should be used over four days for sepsis patients.

Hydrogen and Sepsis

Sepsis, a multiple organ dysfunction syndrome, is the leading cause of death in critically ill patients. Hydrogen gas inhalation significantly improved the survival rate and organ damage of septic mice with moderate or severe cecal ligation and puncture, by reducing levels of early and late pro-inflammatory cytokines in serum and tissues.[xxvii]

Sepsis, a systematic inflammatory response to infection, is one of the most serious diseases in an ICU. Although comprehensive therapy has been developed for it, sepsis is still associated with high morbidity and mortality.

Hydrogen's protective effect on sepsis has been proved by biopsy, levels of inflammatory factors/anti-inflammatory factors, oxidative stress reductions, behavioral experiment, and other related indicators of organ function. Molecular hydrogen therapy is able to significantly reduce the release of inflammatory factors and oxidative stress injury thereby reducing damage of various organ functions that are so common with sepsis.[xxviii]

It is known that most viral induced tissue damage and discomfort, are mainly caused by an inflammatory cytokine storm and oxidative stress rather than by the virus itself. The

same goes for fungus infections that bring on sepsis.

Studies have shown that suppressing the cytokine storm and reducing oxidative stress can significantly alleviate the symptoms of influenza and other severe viral infectious diseases. Medical scientists thus hypothesize that hydrogen-rich solution therapy is a safe, reliable, and effective treatment for Multiple Organ Dysfunction Syndrome (MODS) induced by influenza and other viral infectious diseases.

Hydrogen Outperforms Vitamin C

Hydrogen is a safer gentler antioxidant that Vitamin C or E. High levels of antioxidant vitamins C and E may have significant detrimental effects on the most sensitive cells (placental function), as reflected by decreased cell viability and secretion of hCG; and also on placental immunity, as reflected by increased production of TNF-a. Meanwhile hydrogen showed no such effects on cell proliferation and TNF-α expression. But it could affect the level of hCG, which indicates that hydrogen, as a potential antioxidant candidate in the management of preeclampsia (PE), should be further studied.[xxix][xxx]

Convincing Evidence

When we focus on Dr. Marik's work it is impossible not to see the merits of his work and how many lives it can save. His hospital experimented with his protocol and saw a stunning mortality drop, but doctors are still skeptical because his hospital study involved a small number of subjects; and also because the study compared something at one point in time to a control group further back in time. However, medical institutions are taking this seriously enough to launch more than several studies, all of which will be too late to help the next million who will die of sepsis.

Published online in December 2016 in "Chest," an American College of Chest Physicians medical journal. The study showed that of 47 patients with sepsis treated in Norfolk General's ICU in 2016, four died, an 8 percent mortality rate. Of those four, none died of sepsis but rather the conditions that led to sepsis in the first place. The previous year, 19 of the hospital's 47 septic patients died, a 40 percent rate. Dr. Marik has treated 700 patients with the protocol, and while some have died, it's usually been because of the underlying disease, such as cancer, that led them to a septic state.



Is it too hard to listen to this doctor who is not only sharing his belief but the success of his treatments? Bending to the ignorance of modern medicine he says,"People who know about the treatment either are excited, or they think it's snake oil medicine. It's absolutely clear we need randomized controlled trials to validate this. It's absolutely essential."

He knows though this is not true, anyone who pays the slightest attention will see it needs to be put into use now. Why wait to change if one is already failing miserably with what one is presently doing? From this moment onward, we have the possibility of saving a million lives a year around the world with a safe and effective protocol for sepsis.

Saving Millions of Lives

We all know it is unlikey that present day medical and governmental institutions will see things in a way that will bring relief to these millions of patients and their families. Patients and their families are the ones who pay the ultimate price for the arrogance of doctors. The medical institution seems to have come up with their own FINAL Solution, a killing machine whose steel frame is medical arrogance. I think what Chris Martenson says below describes the world of medicine as much as it does in finance, economics and politics.

> "Our lives are now fraught with easily-disproved fantasies, frauds and fictions being pushed to us through the media by institutions with deliberate agendas trying to engineer specific outcomes. Those of us with a pragmatic mindset and an ability to recall (even quite recent) history, often find ourselves with mouths literally agape at the obvious deceptions being foisted upon what appears to be a terminally-gullible public."

> "Why do so many continue to blindly trust the same government agencies that have brazenly and repeatedly lied to them over the past recent years? If this craziness continues for much longer, at a minimum, we'll face a punishing market correction/crash from which there will be no meaningful recovery in the lifetime of those reading this article. At worst, we face the prospect of World War III, fought with nuclear weapons. If that were to happen, the lifetimes of many reading this article will be a lot shorter. Yes, it's that serious."

With sepsis it's a matter of death for more than 500 thousand Americans a year. Most of these patients can be saved with hydrogen, oxygen, Vitamin C, D, and CO_2, administered with hydrocortisone and thiamine. Survival rates would be pushed higher with injectable selenium, IVs of sodium bicarbonate and injections of magnesium chloride. Many substances can be administered orally or as a gas for inhalation therapy.

Selenium is a strong antioxidant anti-inflammatory. Protection against reperfusion injury, myocardial infarction, ischemic stroke, and vascular surgery are all alleviated with selenium injections, as would cytokine storms resulting from out of control infections.

Inflammation is the activation of the immune system in response to infection, irritation, or injury. Characterized by an influx of white blood cells, redness, heat, swelling, pain, and dysfunction of the organs involved, inflammation has different names when it appears in different parts of the body. Our new protocol for sepsis works directly, not only on life threatening oxidative stress, it also reduces and even removes the massive inflammation that directly leads to organ failure.

[xxvii] Protective effects of hydrogen gas on murine polymicrobial sepsis via reducing oxidative stress and HMGB1 release. Xie K, Yu Y, Pei Y, Hou L, Chen S, Xiong L, Wang G. Shock. 2010 Jul; 34(1):90-7.

[xxviii] Oxidative Medicine and Cellular Longevity. Volume 2016 (2016),

Molecular Hydrogen Therapy Ameliorates Organ Damage Induced by Sepsis

[xxix] Arch Gynecol Obstet. 2015 Aug;292(2):337-42. doi: 10.1007/s00404-015-3647-8. Epub 2015 Feb 14. Effects of vitamin C, vitamin E, and molecular hydrogen on the placental function in trophoblast cells.

[xxx] Cell viability was significantly suppressed by 500 μmol/L vitamins C and E ($P < 0.05$), but not by 500 μmol/L molecular hydrogen ($P > 0.05$). The expression of TNF-α was increased by 100 μmol/L vitamin C and 50 μmol/L vitamins E, separately or

combined ($P < 0.05$), but not by molecular hydrogen (0-500 μmol/L), as validated by real-time RT-PCR. But the secretion of hCG was both inhibited by 50-500 μmol/L molecular hydrogen and high levels of vitamin C and E, separately or combined.

Revolution in Intensive Care Medicine



Emergency Room Medicines for Chronic and Acute Diseases

I wrote many years ago that 'deep within the heart of western medicine is a wisdom and power that is deliberately stymied by medical authorities and the pharmaceutical companies that stand behind them. Inside emergency rooms and intensive care wards, where some of the most accurate medicine is practiced, are common but extraordinarily safe and effective substances that save lives every day. Interesting that no one has thought to harness these medical super weapons against chronic disease or cancer.'

What I did was write a book about each one of them creating in the process a new form of medicine called Natural Allopathic Medicine. The first book was on magnesium, which, when injected, can instantly save a person's life; sodium bicarbonate, which can do the same; iodine, which hospitals cannot survive without; and selenium, which also comes in injectable form. I added intravenous Vitamin C to the list but that is rarely used.

In emergency rooms and intensive care wards, medicines must be safe while, at the same time, delivering an instant lifesaving burst of healing power. Obviously if they are safe and strong enough for emergencies, they are going to help us with commonly faced chronic and acute diseases. Hydrogen is fast acting, safe and inexpensive to administer if

one has an inhalation machine that also makes its own hydrogen water.

What surprises most doctors and many patients is that the best healing agents are not pharmaceutical medicines but highly concentrated nutritional substances. These substances offer a power unequalled in the world of medicine. Medicines that can save a life on demand instantly in an emergency, like cardiac arrest, are some of the same ones we can use to battle diseases that have been baffling the entire western allopathic establishment for decades.

Because nutritional medicines are nontoxic in nature, we can layer treatments and attack from many sides in a simultaneous assault on cancer or anything else that is threatening life or making us ill. Hydrogen, oxygen, sodium and potassium bicarbonate, magnesium, iodine, selenium, medical marijuana, oxygen, CO_2, glutathione, Vitamins C and D, and sulphur are the principle natural agents that can be used in intensive care wards as well as in your own home.

These substances offer a power unequalled in the world of medicine and when combined with each other offer a new form of medicine I call Natural Allopathic Medicine.

Sodium bicarbonate, a common emergency room medicine, acts as a powerful, natural and safe antifungal agent. When combined with iodine it covers the entire spectrum of microbial organisms. The efficacy of sodium bicarbonate against certain bacteria and fungi has been documented, but its role as a disinfectant against viruses is not generally known. Sodium bicarbonate at concentrations of 5% and above was found to be effective with 99.99% reduction viral titers on food contact surfaces within a contact time of 1 min. [xxxi]

Intensive Care for Stage Four and Five Cancer



Hydrogen driven protocols provide us with an entirely new concept in intensive cancer treatment. When doctors give up, and cancer moves quickly to take our life, we have to move fast and stop the cancer in its tracks. Cancer tries to spread like wildfire. We need to bring in enough equipment and enough water to stop deadly fires and we need to do the same thing with cancer.

There are four stages of cancer but when doctors give up on us and give us an imminent death sentence-we can consider this stage five. According to prognosis, you are on your deathbed, or soon will be. Stage five demands emergency intensive care procedures and people can be brought back from deaths door. It is the same for stage four though there is a little more time.

The increasing prevalence of patients living with cancer is leading to a growing number of cancer patients who will require intensive care treatment. Advances in critical care has led to an increased survival of critically ill patients with cancer. Critical care is becoming an important cornerstone in the continuum of modern cancer care.

Occasionally miracles happen in intensive care wards. Sometimes a person's cancer is cured. Dr. Reberto Sapolnik indicates that the interaction between the intensive care team and oncologists allowed for the solution of extremely life-threatening situations for children with Leukemia. Intensive care for children with cancer is crucial for the improvement of their survival rates, with an increasing number of reports on the cure of neoplastic diseases.

Dr. Sapolnik writes, "Cancer itself may cause clinical complications with immediate life threat, such as spontaneous tumor lysis syndrome or tumor compression causing renal insufficiency or intestinal obstruction. Children with cancer often require pediatric intensive care; and thanks to such care, many of them have been able to overcome the most acute phase of the disease."

In intensive care wards, many medicines are given intravenously or through injection. Some people can do this at home as well. However, most of us can duplicate the intensity of such administration through intensive medical baths, transdermal application of medicinals, nebulization and oral intake by loading one's water with powerful medicine. And now we have home use hydrogen and oxygen machines that give us concentrated power to heal the sick. Medicine has never been better.

One can learn to practice intensive care medicine in one's own home more safely and much less expensively than in a hospital. With their antibiotic resistant infections, hospitals are now dangerous places to be. It is embarrassingly simple. There is no excuse

not to learn a lifesaving protocol that restores health

Directions for use for emergency and intensive care:

The most intensive treatments I recommend would be given to a person facing imminent death, after having a heart attack, or suffering from very late stage cancer. Or to a person in an intensive care ward dying of Sepsis. Basic instruction would be to hook a person up to a hydrogen inhaler and leave the gas running continuously until a noticeable change had occurred. Expect such occurrences. Parallel to this is hydrogen water intake, even if it's given intravenously or through feeding tube. We also, of course, need enough oxygen.

Intense treatment should show measurable and noticeable results within eight hours to one to two days. Anyone with high levels of oxidative stress will benefit from hydrogen. Autistic children suffer from oxidative stress, and if they can sit long enough or sleep with the inhaler's nasal cannula they too will benefit.

If the hydrogen inhaler also mixes oxygen into the cannula we only have to add magnesium, selenium, iodine, sulphur and bicarbonate to the protocol for best results.

Special Note: Researchers report that breast cancer can "smolder" and return even 20 years later unless patients keep taking drugs with debilitating side effects to suppress it. I take great exception to this. It will not smolder if enough hydrogen is taken to make sure cellular "fires" do not lead to cancer.

[xxxi] International Journal of Food Microbiology. Volume 109, Issues 1-2, 25 May 2006, Pages 160-163. Virucidal efficacy of sodium bicarbonate on a food contact surface against feline calicivirus, a norovirus surrogate Yashpal S. Malik and Sagar M. Goyal. Department of Veterinary Population Medicine, College of Veterinary Medicine, University of Minnesota. The virucidal efficacy of sodium bicarbonate was enhanced when it was used in combination with aldehydes or hydrogen peroxide.

Hydrogen Inhalation Devices







Hydrogen inhalation devices are available in the United States and are already in wide use in Japan and China. In the chapter *Hydrogen for Surgery & ICU* we saw a high-end hydrogen oxygen inhaler for surgery and intensive care. This chapter is devoted to the different options available for patients themselves and for clinics, units that will deliver the benefits of a thirty-thousand-dollar machine for between two and six thousand.

There are more than several methods to ingest or consume H_2; inhaling H_2 gas, drinking H_2-dissolved water (H_2-water) made with some hydrogen gas machines, drinking hydrogen water using tablets that dissolve hydrogen into the water, injecting H_2-dissolved saline (H_2-saline), H_2 baths, and dropping H_2-saline into the eyes. Another distinct method includes a mixed gas of hydrogen and oxygen. Transdermal use of hydrogen and CO_2 can be very useful, as are hydrogen IVs which at this point are only being used in Japan and China.

The first two months on hydrogen inhalation I sat working on my computer breathing hydrogen and oxygen gases with my American made AquaCure, which is the oldest manufacturer of hydrogen inhaling machines. I loved it and certainly got a good kick upward in terms of my health. The AquaCure is reasonably priced for home use. Through future editions of this book I will report on all the manufactures of hydrogen inhalers because I am determined to test them all.

Now I am using a top of the line Vital Reaction 7 percent hydrogen model (flow rate of four liters a minute) which is three thousand more than the AquaCure, but for sure, it is the model to go with for clinical and hospital use or in any situation where shorter treatment time per day is needed. The very first hydrogen inhaler I ever recommended was a Vital Reaction 2 percent machine, also with a high flow rate (two liters a minute)

however it costs 1,100 dollars more than the AquaCure, which puts out about 1.2 liters a minute of combined gases.

We will eventually see hydrogen inhalers on the sidelines of athletic events in contact sports so injured players get the best emergency treatment from the first seconds they are carried off the field.

It is good to inform you upfront that there is hydrogen only machines, that put out between 2 and 99 percent hydrogen, and then there are machines like the AquaCure that puts out hydrogen and oxygen. Though Hydrogen Medicine favors the combining of these gases in therapy it does not mean you have to get both oxygen and hydrogen from the same machine.

If one chooses a hydrogen inhaler without oxygen output, then it would be ideal to utilize other oxygen therapies that are presented in this book. Even if one goes with a combined gas inhaler, one's need for oxygen healing might still necessitate the employment of more intensive oxygen therapies.

Personally, I use a singlet oxygen machine all night while I sleep and during the day I soup up my oxygen levels with EWOT, which is Exercise with Oxygen Therapy, so I am just fine using a hydrogen gas only machine.

For a few years there have been water machines that put low amounts of hydrogen into one's drinking water. Mine sits in the closet along with my water ionizer, which puts out high pH but low alkalinity and very low hydrogen. There are now higher costing units perfect for multiusers that put out highly concentrated (high parts per million ppm) of hydrogen into the water thus realizing therapeutic effects.

The Breath of Health hydrogen inhalers are interesting in that they offer an attachment tube that lets you combine the oxygen and hydrogen output as well as offering a fleet of esoteric add on technologies (that I have not tested yet) for enhanced performance. Best selection there would be their 600 ml per minute machine.

The AquaCure and the HydroGenie (less expensive hydrogen and oxygen machine that comes without an enclosure) can make hydrogen water by passing the gas through water yielding hydrogen and oxygenated water. It is worthy to note that most of the research is done with pure hydrogen machines, though some specifically mention using hydrogen and oxygen.

On https://hydroproducts.info/ one can see the major players in the hydrogen inhalation market and I will be adding to the list of machines as I receive and test out

new models.

What to Expect from Hydrogen Treatments

- Detoxification
- Restores youthfulness
- Ulcers and sores healing
- Stronger and thicker hair
- Reduction in blood pressure
- Slows down free radical damage
- Lowers cholesterol levels
- Helps flush heavy metals from our bodies
- Helps in absorption of supplements
- Improved allergies and asthma conditions
- Better blood circulation
- Lower saturated fat levels
- Less body fatigue
- Faster recovery from diseases
- Improved peripheral circulation
- Reduces cellulite and wrinkles
- Improves memory in elderly
- Boosts brain power
- Reduces acidic condition
- Improved constipation and diarrhea conditions
- Improved blood glucose

The more serious one's condition the more one wants to combine inhalation of hydrogen gas with hydrogen water.

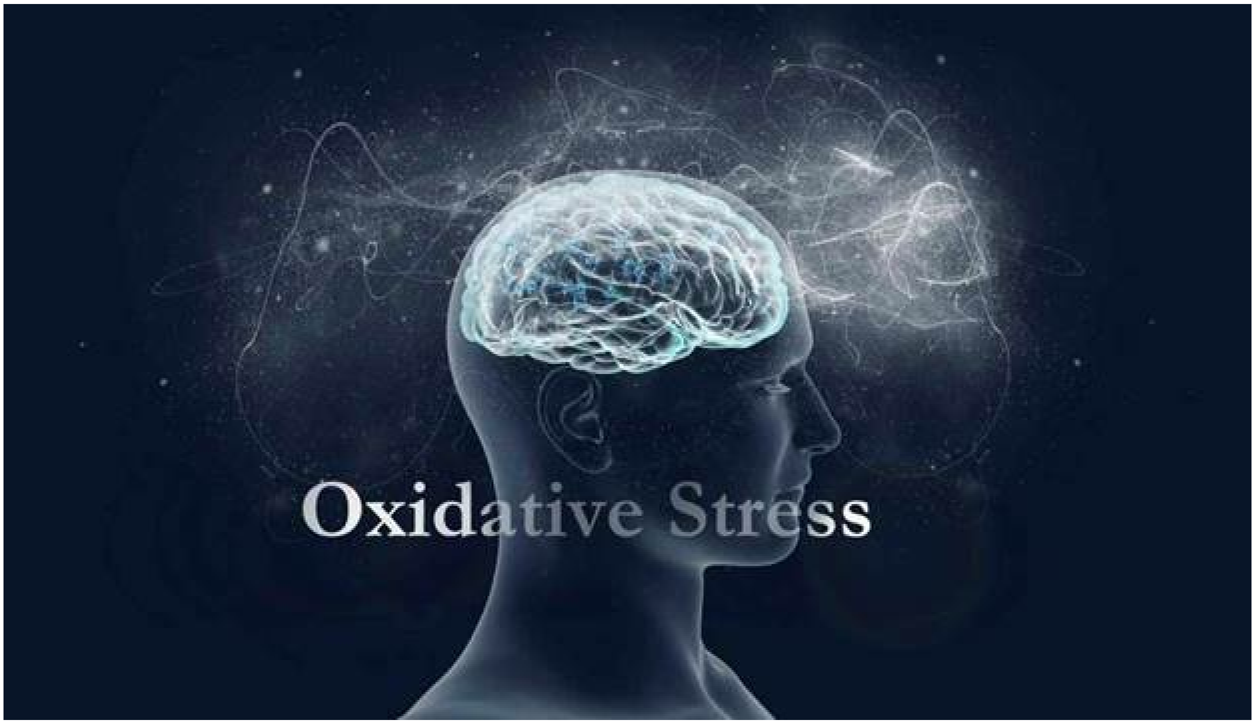
Common testimonies using hydrogen include diminishing of numbness in extremities, reduction and elimination of oedema, improvement of sinus problems, more energy, improvements in blood sugar, diminishing need for insulin, feeling the difference after first treatments, feelings of refreshment and lightness on one's feet, improvements in skin conditions, improvements in stamina, feelings of body changes and energy levels, Unstiffening of knees and ankles, stimulates youthful feelings, more alert, improvements in circulation, reduction of pain, headaches gone, reduction in need to take painkillers, skin appearance dramatically improved, stronger hair, spots on face reduced, reduction of constipation, reduced feelings of depression, neck no longer stiff and restoration of full range of movement, nails become stronger, hair breakage and split ends minimalized.

The proceedings from the International Hydrogen Standards Association (IHSA) announced at the International Hydrogen Industry Development Forum, organized by International Molecular Hydrogen Association (IMHA) in Guangzhou, China on Sept. 14, 2017 published:

Inhalation of hydrogen

For inhalation, a 2-4% hydrogen gas mixture is common because it is below the flammability level; however, some studies use 66.7% H_2 and 33.3% O_2, which is nontoxic and effective, but flammable. Inhalation of hydrogenreaches a peak plasma level (i.e. equilibrium based on Henry’s Law) in about 30 min, and upon cessation of inhalation the return to baseline occurs in about 60 min.

Inflammation, Free Radical Damage, Oxidative Stress and Hydrogen



Since Dr. Denham Harman published his free-radical theory, there have been more than 300,000 research studies confirming that free radicals are the main cause of diseases and aging. Oxidative stress, caused by rivers of free radicals, is a plague on modern man. Whether it's the toxic pollution in the air you breath 24/7, medically induced radiation, [xxxii] pharmaceutical medicines, chemotherapy, your cell phone constantly at your brain, or even WI-FI and other EMF pollution generating devices, you expose yourself to oxidative stress,[xxxiii]

Oxidative stress has been associated with numerous health conditions including chronic fatigue syndrome, fibromyalgia, diabetes, Alzheimer's disease, anxiety, insomnia, cancer, and just about every disease you can imagine. Oxidative stress, directly or indirectly caused by chemotherapeutics is one of the underlying mechanisms of the toxicity of anticancer drugs in noncancerous tissues, including the heart and brain.[xxxiv] During cancer chemotherapy, oxidative stress-induced lipid peroxidation generates numerous electrophilic aldehydes that attack many cellular targets.[xxxv] Oxidative stress, generated by almost all prescribed drugs as they are metabolized, acts as a source and progression of many dreadful diseases. Reactive metabolites formed during this process

cause oxidative stress and can impair the function of drug metabolizing enzymes leading to toxicity.[xxxvi]

The World Health Organization calls pollution a greater global threat than Ebola and HIV. According to its recent report, one in four deaths among children under five are now due to environmental hazards such as air pollution and contaminated water. It is simple; poisons in our air and water create oxidative stress, which leads to disease, cancer and death. Epidemiological studies have shown a clear association between cardiovascular morbidity, decreased lung function, increased hospital admissions, mortality, and airborne concentrations of photochemical and particulate pollutants.

Heavy Metals

Heavy metals clog up receptor sites, break and bend sulfur bonds in important enzymes like insulin, damage the DNA and in general muck up everything and anything to do with healthy biological life.

Dr. Harold Buttram says, "Much of the current complacency about human chemical exposures is due to the method of toxicity testing, based on animal studies, in which a single chemical is tested to find an estimated 'safe' level for human exposure. Such testing is mandated by the Delaney Amendment of 1958, which requires the testing of potentially toxic chemicals for carcinogenic properties. There are several flaws and inadequacies in this system, but perhaps the greatest flaw is that it does not take into account the effects of simultaneous human exposures to multiple environmental chemicals and their additive effects."

In the clear majority of cancer patients there exists **a combination of psychological as well as physiological stresses** that have contributed to the formation of cancer within the body. Psychological stresses include (but are not limited to): inescapable shock, repressed emotional pain and anger, depression, isolation, poor sleep, emotional trauma, and circumstantial life stresses. Physiological stresses include (but are not limited to): poor nutrition, chemicals, toxins, EMF radiation, parasites, liver, colon or kidney disease, and lack of exercise.

So, in the end we can see that cancer is a prime example of how heavy-metal toxicity, free-radical damage, pathogen infection, mineral and vitamin deficiencies, inflammation, mitochondria dysfunction, immune system depression, genetic mutation, cell wall damage and oxidative stress all come together into an end-stage life-threatening condition. Add mental and emotional stress and shock to the mix and we have a complicated situation to resolve.

Cancer treatment can be approached in many ways, but the best way is to address all these problems simultaneously, which a hydrogen led protocol would do. Cancers are traditionally thought of as an environmental disease with 90-95% of cases attributed to environmental factors and 5-10% due to genetics. Common environmental factors that contribute to cancer death include tobacco (25-30%), diet and obesity (30-35%), infections (15-20%), radiation (both ionizing and non-ionizing, up to 10%), and stress, lack of physical activity, and environmental pollutants.

Studies on brain tumors in the past 10 or more years have shown an increase in the incidence of brain tumors in the general population. Extensive research during the last two decades has revealed the mechanism by which continued oxidative stress leads to chronic inflammation, which in turn leads to most chronic diseases including cancer.

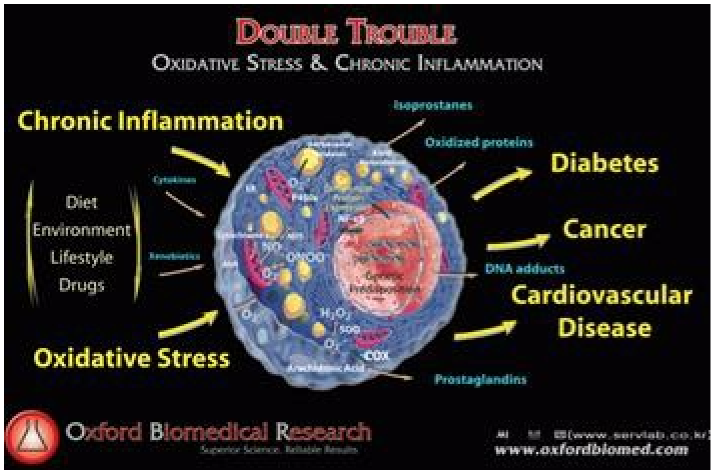
Cellular exposure to ionizing radiation leads to oxidizing events that alter the molecular structures of macromolecules through direct interactions of radiation that target the macromolecules, or via products of water radiolysis. Further, the oxidative damage may spread from the targeted to neighboring, non-targeted bystander cells through redox-modulated intercellular communication mechanisms. People who started using cell phones at an earlier age have a greater chance of developing a brain tumor when compared to people who started late (during their adult years).

Reactive oxygen species (ROS) are a by-product of normal metabolism. Even under pristine conditions when our cells use glucose to make energy we create a cascade of free radicals that cause oxidative stress. The more sugar we consume the greater our oxidative stress. When our immune system is fighting off bacteria and inflammation we suffer from increased oxidative stress. When our bodies detoxify pesticides, herbicides, fungicides and cigarette smoke we create oxidative stress.

Pancreatic cancer cells use the sugar fructose to help tumors grow more quickly. A team at the University of California Los Angeles found that tumor cells fed both glucose and fructose used the two sugars in different ways. Their findings, published in the journal Cancer Research, helps explain other studies that have linked fructose intake with pancreatic cancer, one of the deadliest cancer types. Researchers concluded that anyone wishing to curb their cancer risk should start by reducing the amount of sugar they eat.

Oxidation increases when we are physically and/or emotionally stressed. However, as long as we have enough anti-oxidants, a careful balance is maintained and damage is prevented. Oxidative stress happens when the amount of free radicals exceeds the amount of antioxidants. That's when oxidation damages our cells, proteins and our DNA (genes). Oxidative stress is essentially an imbalance between the production of free

radicals and the ability of the body to counteract or detoxify their harmful effects through neutralization by antioxidants.



Oxidative Stress Test with Hydrogen Water

Below you will find the results of a preliminary study using the AkersBio Breath Scan device, used to record Oxidative Stress (OS) prior to taking the Vital Reaction (H2) product. Several scans were taken during the effective time using this product.

An AkersBio breath Scan device was used to measure the percentage of drop in Oxidative Stress (OS) from using the Vital Reaction Molecular Hydrogen product. After taking a baseline OS level, I consumed one tablet in 12 ounces of water drinking the full glass quickly.

Follow up OS levels were taken every ½ hour until OS level returned back to a level consistent with the starting baseline level. I repeated this procedure over a five day period.

Baseline Low Score Percent of Change Duration

Day 1: 735 473 36% 3.0 hrs

Day 2: 746 574 23% 2.5 hrs

Day 3: 618 464 25% 2.5 hrs

Day 4: 717 562 22% 3.0 hrs

Day 5: 635 414 35% 2.5 hrs

Average

691 497 28% 2.7 hrs

[xxxii] Cancer Lett. 2012 Dec 31; 327(0): 48-60. Ionizing radiation-induced metabolic oxidative stress and prolonged cell injury

[xxxiii] International Journal of Cell Biology. Volume 2012 (2012), Article ID 683897, 16 pages

Electromagnetic Fields, Oxidative Stress, and Neurodegeneration

[xxxiv] Collateral Damage in Cancer Chemotherapy: Oxidative Stress in Nontargeted Tissues. DOI: 10.1124/mi.7.3.6 · Source: PubMed

[xxxv] Integr Cancer Ther. 2004 Dec;3(4):294-300. Chemotherapy-associated oxidative stress: impact on chemotherapeutic effectiveness.

[xxxvi] Drug Metabolism and Oxidative Stress: Cellular Mechanism and New Therapeutic Insights

Sharmistha Banerjee, Jyotirmoy Ghosh and Parames C Sil. Division of Molecular Medicine

Hydrogen the Ultimate Anti-Aging Medicine



There's no single factor that contributes to longevity; however, that does not stop us from wanting to know how to live longer and healthier. Some medical scientists believe that we may have reached our maximum limits for height, lifespan and physical performance.

A recent review suggests humans have biological limitations, and that anthropogenic impacts on the environment -- including climate change -- could have a deleterious effect on these limits. The climate is changing. With pollution and radiation exposure also heading higher there was reason to despair until hydrogen came along.

Hydrogen therapy is not snake oil. Hydrogen runs the universe, cars, trucks, rockets and, if taken in sufficient quantities, will run your life longer than usual because of all its protective effects. Scientists have a pipeline full of promising anti-aging compounds waiting for human trials, yet un-patentable hydrogen is not on their list. Hydrogen, the smallest, simplest atom and molecule in existence, hydrogen (H^- and H_2) is the safest anti-aging medicine for prolonging our existence.

Molecular hydrogen acts as a powerful antioxidant helping defend cells and genes from

the damage caused by harmful free radicals. This property, combined with its anti-inflammatory effects help enhance longevity, because aging is caused by tissue degeneration, oxidative stress and inflammation.

It was no surprise that in July 2016, a Japanese study concluded that hydrogen showed, "substantial evidence" indicating beneficial vascular benefits. These medical scientists showed specific long-lasting antioxidant and anti-aging effects on vascular endothelial cells through the Nrf2 pathway, even after transient exposure to H2. They concluded that hydrogen-rich water is a functional drink that increases longevity.[xxxvii]

Another study, "Effects of Hydrogenized Water on Intracellular Biomarkers," shows that hydrogenized water increases telomerase activity , an enzyme that promotes stronger telomeres - the caps at the end of chromosomes that impact aging. It concludes that molecular hydrogen helps protect telomeres from degradation, "contributing to the improvement of age regulation." These scientists also investigated hydrogen's effect on insulin signalling.

In terms of aging, the antioxidant effect of hydrogen gas or water would diminish erosion of our telomeres, which are at the very tip of our chromosomes. Telomeres in most human cells shorten with each round of DNA replication, because they lack the enzyme telomerase. This is not, however, the only determinant of the loss of telomeric DNA. Oxidative damage is repaired less well in telomeric DNA than elsewhere in the chromosome. Oxidative stress accelerates telomere loss, whereas antioxidants decelerate it.[xxxviii]

For $8,000, a company named Ambrosia will now infuse older patients with young donor's blood serum. For much less money you can treat yourself every day, and include the entire family for no extra cost. Everyone can live longer with hydrogen.

Silicon Valley executives follow weird revitalization fads. They think the code of aging can be hacked and death made optional. Just wait till they discover the anti-aging miracle of molecular hydrogen, which makes surviving under great stress much easier. Just ask deepsea divers what they are breathing to stay alive at depths of almost 2000 feet. Hydrogen!

https://www.youtube.com/watch?v=OguvsUhb8z0

It is worthwhile to watch this video if you are interested in what hydrogen can do for older people. Bottom line, when nothing else worked hydrogen did. At the end of this video, patient and doctor are talking about miracles. Hydrogen Medicine, however, is about hard medical science and clinical observations.

Until now we've made little progress in extending the outer limit of the human lifespan. Yes, more people are living longer because we've gotten better at nutrition, curing acute conditions such as infections, and treating a handful of chronic diseases. But the maximum reported age has plateaued at around 115 years.

Now with hydrogen inhalation therapy, supported with increased oxygen delivery and CO_2 retention, we can stretch our years beyond all expectations, and also enjoy peak health during that time.



The world is graying at a break-neck pace. The majority of all health care dollars are spent on extraordinary care in the last two to three years of life-specifically on cancer and intensive care for heart and stroke patients. Over one hundred million Americans are currently being treated for one or another degenerative disease at a health care cost of more than $700 billion per year. Medical insurance costs are shooting up at a rate that means most people are not going to be able to afford the cost of aging.

> All we need is to do 10 minutes of large body movements every day to increase the blood flow, flush out the toxins, and inject the entire body with energy-giving oxygen and nutrients. Miranda Esmonde White

The opposite of a tired rundown aging cell is a metabolically active cell charged with strong mitochondria. The hallmarks of strong, metabolically active mitochondria are a myriad of factors including high levels of bicarbonate and carbon dioxide (alkaline conditions), healthy oxygen transport, high levels of magnesium ions, healthy sleep and breathing patterns, normal body temperature as well as healthy levels of nutritional agents in general.

Disease states including cancer are in great part attributable to mitochondrial dysfunction and oxygen deficiency (hypoxia). This assertion is supported by eminent scientists like Albert Szent-Gyorgyi, Otto Warburg, Emmanuel Revici and Linus Pauling. Nearly 80 years after Otto Warburg first proposed that cancer was caused by mitochondrial dysfunction, recent research from the Karolinska Institute in Sweden, Boston College and Washington University School of Medicine have now thoroughly revived his theory.

Scientists think the reason we age can be attributed to not only free radical damage, but also to chronic low-level inflammation, which builds over time. All the unwelcome effects of aging, including metabolism slowdown, stiffness, frailty, aches, and pains, are caused by toxic build-ups and nutritional deficiencies, **especially deficiencies in the most basic nutrients, like oxygen, carbon dioxide, hydrogen and magnesium**. The best methodology for reversing our aging process is to combine therapies that reinforce and multiply the other.

Living longer is all about You

If you're looking to live to 100, you may want to watch more than your diet. A study, published in International Psychogeriatrics, of people in remote Italian villages who lived past 90 found that these older folks still had purpose in life, were still active and had personality traits that included being controlling, domineering and stubborn.

The oldest adults had other qualities in common as well, including positivity, a strong work ethic and close bonds with family, religion and the countryside. Most of the older adults in the study were still active, working regularly in their homes and on their land. This gave them a purpose in life, wrote the study authors, even after they reached old age.

In my book HeartHealth, I write that people with open and radiating hearts stay young forever. The spiritual heart, when wide open, represents a fountain of youth and a force that helps us resist environmental insults, infections and disease. There is nothing like love and an unselfish disposition to sustain a person through the decades.

Unconditional love is your immune
system's most powerful stimulant.
Dr. Bernie Siegel

Dr. Norman Shealy and Dr. Caroline Myss both clearly believe that loving others and being loved are key factors in improving the immune system, adding to life expectancy

and creating overall happiness. What does love have to do with stress-free living? "Everything!" says Dr. Brenda Schaeffer.

Feeling young and staying young is not a fools dream. Folks who feel "young at heart" are more likely to live to a ripe old age, a new British study suggests. Seniors who said they felt three or more years younger than their actual age experienced a lower death rate over the course of eight years than people who either felt their full age or a little older, researchers report in the journal JAMA Internal Medicine.

About 25 percent of people, who felt older than their actual age died, compared with about 14 percent of people who felt younger than their true age and almost 19 percent who felt their age. More than two-thirds of participants felt three or more years younger than their actual age, while about a quarter felt their age. About 5 percent felt more than a year older than their true age.

The findings show how powerful optimism can be when it comes to a person's overall health, said James Maddux, professor emeritus of psychology and senior scholar at the Center for the Advancement of Well-Being at George Mason University, in Fairfax, Va.

"Optimism in many ways is a self-fulfilling prophecy," he said. "If you feel your life and your health is largely under your control, and you believe you are capable of doing things like managing stress, eating right and exercising, then you are more likely to do those things."

More than twice as many people who felt older than their true age died from heart-related illness, compared with those who felt young - 10.2 percent, compared with 4.5 percent.

Sad Conclusion

Unfortunately, all bets are off if you subject yourself to modern medicine, whose toxic drugs almost universally have a negative impact on the mitochondria. In the United States medical errors and properly prescribed medicines together represent statistically one of the major causes of premature death.

[xxxvii] Molecular Hydrogen Alleviates Cellular Senescence in Endothelial Cells. Circulation Journal. Circ J 2016; 80: 2037-2046

[xxxviii] Trends Biochem Sci. 2002 Jul;27(7):339-44. Oxidative stress shortens telomeres.

Hydrogen and Oxygen are Mitochondrial Medicines

The Nobel Prize was awarded to Dr. Peter Mitchell in 1978 for his theory of chemiosmosis. According to his model, **Hydrogen is essential in the production of ATP** in the mitochondria, the source of all energy in the cells, and therefore the body. This works through hydrogen dehydrogenase, a flavoprotein catalyzing the conversion of NAD+ to NADH by molecular hydrogen (H_2); $H_2 + NAD^+ \rightarrow H^+ + NADH$.

Until now, aside from symptom-based management, treatment of mitochondrial disease focused only on maintaining optimal health, using preventive measures to mitigate symptoms intensifying during times of physiologic stress (such as infection, dehydration, or surgery), and avoiding mitochondrial toxins - not easy if you are under the care of a mainstream doctor.

An open-label trial of drinking 1.0 liter of hydrogen infused water (molecular hydrogen) per day over 12 weeks was performed on fourteen patients, five having progressive muscular dystrophy, four having polymyositis, dermatomyositis, and five having mitochondrial myopathies. **Drinking hydrogen water improved mitochondrial function in mitochondrial myopathies and reduced the inflammatory processes** in polymyositis and dermatomyositis.[xxxix]

Evidence always supported the use of antioxidant supplements, aimed at reducing reactive oxygen species that are produced in increased amounts in mitochondrial disease. Now all evidence points to hydrogen, the most abundant substance, as an ideal mitochondrial medicine.

Negative hydrogen ions are able to generate ATP in the mitochondria and trap free radicals effectively. The H- changes NAD+ in the mitochondria to NADH. The NADH is then processed in the electron transport system to product 3 ATP molecules. Normally the Krebs cycle produces NADH, but the H- makes it possible to bypass the Krebs cycle by recycling NAD+ to NADH to do this.

To understand the concept and practice of increasing cellular lifespans, and thus health and vitality one has to look deep into the cell's mitochondria, the Krebs cycle, the electron transport system, and how hydrogen plays a crucial role in the creation of ATP.

https://www.youtube.com/watch?v=mfgCcFXUZRk

According to a 2013 review published in the journal, Medical Gas Research-hydrogen squeaks its way into the mitochondria, the energy centers of a cell, and penetrates the nucleus, where the majority of DNA is stored. Once there, it significantly reduces free radicals-inflammation-causing molecules.

Penetrating the Mitochondria with Hydrogen

All of the energy generated for the use of a cell occurs within the mitochondria via a type of rechargeable battery system known as ATP/ADP. ATP exists when the battery is charged and ready for work. As energy is spent, the battery becomes ADP. **The recharging of ADP to ATP requires a huge energy investment**. That energy comes from the food we eat, the air we breathe and the water we drink. It also comes from light!

Cellular energy (ATP) needs to be produced by each individual body cell in order for it to operate properly. If the cell does not have sufficient ATP, it is fatigued and susceptible to illness and infection and cannot function the way it was intended.

Cancer, inpart, is a result of the functional degradation of a cellular photon absorption pathway that is basic to the production of ATP. Dr. Heinrich Kremer, a German doctor known for his dissident work in the area of AIDS, points out that in cancer, there is a functional breakdown of a photon-mediated pathway for ATP synthesis in the mitochondria of our cells.

Dr. Kremer sees the origin of cancer differently than does mainstream medicine. He terms his new theory Cell Dyssmybiosis. According to Kremer cancerous cells do not originate from DNA mutations, but from a functional process that occurs in the mitochondria. ATP production, according to Kremer, is not based on chemical energy release, as taught in universities today, but rests on the absorption of photons of light.

"Damage to mitochondria is now understood to play a role in the pathogenesis of a wide range of seemingly unrelated disorders such as schizophrenia, bipolar disease, dementia, Alzheimer's disease, epilepsy, migraine headaches, strokes, neuropathic pain, Parkinson's disease, ataxia, transient ischemic attack, cardiomyopathy, coronary artery disease, chronic fatigue syndrome, fibromyalgia, retinitis pigmentosa, diabetes, hepatitis C, and primary biliary cirrhosis.

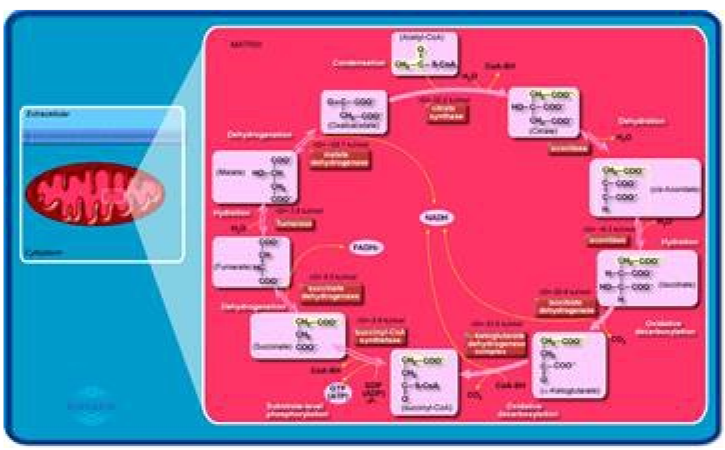
Medications have now emerged as a major cause of mitochondrial damage, which may explain many adverse effects. All classes of psychotropic drugs have been documented to damage mitochondria, as have statin medications, analgesics such as

acetaminophen, and many others."[xl]

Our mitochondria are where the majority of free radicals are generated. When high amounts of free radicals overpower antioxidant defenses, the battle for life is lost as dysfunctions in mitochondria accumulate.

Dr. Michael R. Eades says, "As the high-energy electrons are passed along down the inner mitochondrial membrane they occasionally break free. When they break free, they become free radicals. These rogue free radicals can then attack other molecules and damage them. Because these free radicals are loosed within the mitochondria, the closest molecules for them to attack are the fats in the mitochondrial membranes. If enough of these fats are damaged, the membrane ceases to work properly. If enough of the membrane does not work, the entire mitochodrium is compromised and ceases functioning. If enough mitochondria bite the dust, the cell doesn't work and undergoes apoptosis, a kind of cellular suicide. This chronic damage and loss of cells is the basic definition of aging."

Reviving the Krebs Cycle



Essentially the Krebs cycle (also known as the citric acid cycle) involves a series of enzymatic reactions that transform proteins (in the form of their constituent amino acids), fats (as their constituent fatty acids) and carbohydrates (as glucose) into intermediate substances. These intermediates are then passed into the electron transport chain where they undergo a further series of reactions - receiving and donating electrons down the chain - to produce energy, in the form of ATP (adenosine triphosphate), CO_2 and water. The presence of sufficient oxygen within the cells is essential to the success of this entire procedure, as the term oxidation itself indicates.

Hypoxia (low oxygen conditions) is a critical hallmark of solid tumors and involves

enhanced cell survival, angiogenesis, glycolytic metabolism, and metastasis. Healthy cells need oxygen to survive. Even cells in the deepest, darkest parts of our body cannot live without oxygen. Some cancer cells, however, adapt to survive in very low oxygen levels, and these end up being the most difficult to treat. Oxygen treatments have been used to improve or cure disorders involving hypoxia and ischemia, by enhancing the amount of dissolved oxygen in the plasma and thereby increasing O_2 delivery to the tissue.

The Krebs cycle stops running when there is no oxygen because of the intimate link it shares with the electron transport chain. A lack of oxygen creates a giant backlog of electrons, which prevent NAD+ from being regenerated. This stops the Krebs Cycle and forces anaerobic respiration to supply ATP.

Dr. Gregg Semenza, the C. Michael Armstrong professor of medicine at the Johns Hopkins School of Medicine explains that in order to move, cancer cells need to initiate a number of changes to their internal structures.[xli] Dr. Semenza says that low oxygen levels often occur in breast cancers. "As tumor cells multiply, the interior of the tumor begins to run out of oxygen because it isn't being fed by blood vessels. The lack of oxygen activates the hypoxia-inducible factors, which are master control proteins that switch on many genes that help cells adapt to the scarcity of oxygen."

Biologists from Johns Hopkins found that low oxygen conditions prompted increased production of proteins called RhoA and ROCK1. High levels of these proteins are known to give cancer cells the ability to move and spread, leading to poorer outcomes for cancer patients. RhoA is also important in mitochondrial distribution regulation.[xlii]

Mitochondrial Derailment

Cancer cells do have dysfunctional mitochondria, which prevents their use of the citric acid [Krebs] cycle. Consequently, pyruvic acid, the product of glycolysis, which normally would enter the mitochondria for its total combustion into energy, is instead converted to lactic acid. It is reported that cancer cells can produce 40 times more lactic acid than normal cells. Their metabolism is dirty and poisons the cells around them with increasing acidity.

Dr. Majid Ali says, "Injured mitochondria mutate at much higher rates. Damaged mitochondria are exhausted mitochondria. Exhausted mitochondria cannot produce sufficient ATP molecules. An insufficient supply of ATP molecules means insufficient energy. Insufficient molecular energy means clinical chronic fatigue." These organelles are the power generators of the cell, converting oxygen and nutrients into ATP (adenosine triphosphate). ATP is the chemical energy "currency" of the cell that powers

the cell's metabolic activities. This process is called aerobic respiration and is the **reason animals breathe oxygen**.

In the 1920s Dr. Otto Warburg carried out a great deal of work on cancer's basic mechanism and was awarded a Nobel Prize in 1932. Warburg's work clearly demonstrated that **cancer is, fundamentally, a relatively simple disease where cell oxygen levels fall to a level sufficiently low enough for the cell to change in nature**.

"The German cancer researcher Dr. Paul Gerhard Seeger[xliii] demonstrated in 1938 that in most cases cancer starts in the cytoplasm, the jelly-like outer part of the cell, and especially in the energy-producing mitochondria. Here food fragments are normally oxidized in a series of enzymatic steps called the 'respiratory chain'. Seeger showed that **in cancer cells this respiratory chain was more or less blocked**, especially at the site of the important enzyme cytochrome oxidase. Without it the cell can produce energy only anaerobically like a fungal cell. This is very inefficient and the resulting overproduction of lactic acid makes the cell and the whole body overly acidic.

Seeger and others found that cancer cells utilize only between 5 and 50% of the oxygen of normal cells. The virulence of cancer cells is directly proportional to their loss of oxygen utilization, and with this to the degree of blockage of the respiratory chain. In 1957 Seeger successfully transformed normal cells into cancer cells within a few days by introducing chemicals that blocked the respiratory chain.

Oxygen is the final acceptor of electrons in the electron transport chain. Without oxygen, the electron transport chain becomes jammed with electrons. Consequently, NAD[xliv] cannot be produced, thereby causing glycolysis to produce lactic acid instead of pyruvate, which is a necessary component of the Krebs Cycle. Thus, **the Krebs cycle is heavily dependent on oxygen**, deeming it an aerobic process.

Dr. Robert Rowan says, "Warburg emphasized that you can't make a cell ferment unless a LACK OF OXYGEN is involved. In 1955, two American scientists, R.A. Malmgren and C.C. Flanigan, confirmed Warburg's findings. They found that oxygen deficiency is ALWAYS present when cancer develops."

Warburg found that you can reverse fermentation simply by adding oxygen - but only if you do it early enough. He incubated cells in nitrogen, starving them of oxygen for regular but short periods. Starving the cells of oxygen caused them to begin fermentation. Restoring oxygen promptly enabled the cells to recover. But the longer they were oxygen starved, the slower and less certain the recovery. With enough oxygen

starvation, cells don't recover. Once they reach a certain point, no amount of oxygen will return them to normal." But we can make these cancer cells die with oxygen and carbon dioxide medicine.

Sugar Poisons Oxygen Transport and Absorption

One of the main reasons cells lose oxygen is high sugar intake. **Warburg said that glucose brings down a cell's ability to use oxygen.** One of the principle ways sugar does this is by creating inflammation in the capillaries and other tissues, thus cutting down on oxygen delivery to the cells.

[xxxix] Med Gas Res. 2011 Oct 3;1(1):24. Open-label trial and randomized, double-blind, placebo-controlled, crossover trial of hydrogen-enriched water for mitochondrial and inflammatory myopathies.

[xl] Mol. Nutr. Food Res. 2008, 52, 780 - 788

[xli] ROCK AND RHO: PROTEINS THAT HELP CANCER CELLS GROOVE; Johns Hopkins News http://www.hopkinsmedicine.org/news/media/releases/rock_and_rho_proteins_that_

[xlii] Regulation of mitochondria distribution by RhoA and formins; Alexander A. Minin et al;

Cell Sci; 119, 659-670; February 15, 2006; http://jcs.biologists.org/content/119/4/659.long

[xliii] The only book available in English is Seeger, P.G. and S. Wolz: Successful biological control of cancer by combat against the causes. Neuwieder Verlagsgesellschaft, Neuwied, Germany 1990. The most important book is Seeger, P.G: Krebs - Problem ohne Ausweg? ("Cancer - Problem without Solution?") Verl. f. Medizin Fischer, Heidelberg, Germany 1974, 2nd ed 1988

[xliv] Nicotinamide adenine dinucleotide, abbreviated **NAD+**, is acoenzyme found in all living cells. The compound is a dinucleotide, since it consists of two nucleotides joined through their phosphate groups. One nucleotide contains an adenine base and the other nicotinamide.

In metabolism, NAD+ is involved in redox reactions, carrying electrons from one reaction to another. The coenzyme is, therefore, found in two forms in cells: NAD+ is an oxidizing agent - it accepts electrons from other molecules and becomes reduced. This

reaction forms **NADH**, which can then be used as a reducing agent to donate electrons.

Hydrogen & Cancer



In 1975, an impressive study demonstrated that hyperbaric molecular hydrogen therapy could be a possible treatment for cancer. In this study, the researchers showed that exposing mice with skin cancer (tumors) to 2.5 percent oxygen (O_2) and 97.5 hydrogen (H_2) for two weeks produced a dramatic and significant regression of the mice tumors.

"After a first 10-day period of exposure of the mice to the hydrogen-oxygen therapy it was found qualitatively 1) that the tumors had turned black, 2) that some had dropped off, 3) that some seemed to have shrunk at their base and to be in the process of being 'pinched off,' and 4) that the mice appeared to suffer no deleterious consequences."[xlv]

In my *Sodium Bicarbonate* book I introduced the practice of using the least expensive safest medicine in the world to treat cancer because it gives one control over carbon dioxide levels in the body's fluids, which helps oxygen delivery (See following chapter). In my book *Anti-Inflammatory Oxygen Therapy* I supported the use of oxygen therapy to rid the body of cancer. And now we add *Hydrogen Medicine* to the list.

Hydrogen has been shown to suppress VEGF (Vascular Endothelial Growth Factor), a key mediator of tumor angiogenesis (the development of new blood vessels), by the reduction of excessive ROS (oxidative stress) and through the down regulation of ERK

(key growth factor needed for cellular division).

Scientists have also found that **molecular hydrogen caused growth inhibition of human tongue carcinoma cells** HSC-4 and human fibrosarcoma cells HT-1080 but did not compromise growth of normal human tongue epithelial-like cells DOK. Hydrogen has also been shown to protect BALB/c mice from developing radiation-induced thymic lymphoma. The elimination of radical oxygen species by hydrogen should reduce a probability of introducing somatic mutations."[xlvi]

H2 has been shown to reduce the excessive expressions of MMP genes (MMP proteins are involved in multiple functions in cells, including cell proliferation, cartilage synthesis, apoptosis, angiogenesis, etc.). We know that cancerous cells have a higher expression of MMP genes leading to tumor invasion and tumor angiogenesis. H2 has been shown to reduce tumor invasion and tumor growth. Because of this effect, H2 has been shown to have anti-tumor effects.[xlvii], [xlviii]

"ERW [hydrogen water] causes telomere shortening in cancer cells and suppresses tumor angiogenesis by scavenging intracellular ROS and suppressing the gene expression and secretion of vascular endothelial growth factor. In addition, ERW induces apoptosis together with glutathione in human leukemia HL60 cells (Tsai et al. 2009a, b)."[xlix]

"Treatment with H2 water increased the expression of p-AMPK, AIF and Caspase 3 (cell apoptosis pathways) in colon 26 cells. Thus, H2 water resulted in cell apoptosis mediated by the AMPK pathway in colon 26 cells".[l]

Molecular hydrogen may protect healthy tissue/cells from anticancer drugs and has been shown through studies to have a protective effect against chemotherapy drugs. Hydrogen has potential for improving the quality of life of patients during chemotherapy by efficiently mitigating the side effects of cisplatin."[li]

Molecular hydrogen may protect and retard the development of thymic lymphoma in mice. "The radiation-induced thymic lymphoma rate in the H2 (+) group was significantly lower than in the control group and H2 treatment significantly increased the latency of lymphoma development after the split-dose irradiation. These data indicated that H2 protects mice from radiation-induced thymic lymphoma in BALB/c mice."[lii]

"Molecular hydrogen caused growth inhibition of human tongue carcinoma cells HSC-4 (cancerous) and human fibrosarcoma cells HT-1080 (cancerous) but did not compromise growth of normal human tongue epithelial-like cells DOK."[liii] The Molecular Hydrogen Foundation provides more hydrogen and cancer studies.

Higher levels of hydrogen have been shown to protect DNA against oxidative damage by suppressing single-strand breakage of DNA caused by ROS, and to protect against oxidative damage to RNA and proteins.[liv]

It all starts with Inflammation

The *Yale Journal of Biology and Medicine* tells us that, "Tumor promotion and progression are dependent on ancillary processes provided by cells of the tumor environment but that are not necessarily cancerous themselves. **Inflammation has long been associated with the development of cancer.** This review will discuss the reflexive relationship between cancer and inflammation with particular focus on how considering the role of inflammation in physiologic processes such as the maintenance of tissue homeostasis and repair may provide a logical framework for understanding the connection between the inflammatory response and cancer."[lv]

Immune inflammatory states serve as a key mediator of the middle stages of tumor development. In 2008 *Scientific American* published, "Cancer biologists and immunologists have begun to realize that the progression from diseased tissue to full-blown invasive cancer often requires cells that normally participate in healing cuts and scrapes to be diverted to the environs of the premalignant tissue, where they are hijacked to become co-conspirators that aid and abet carcinogenesis. As some researchers have described the malignant state: **genetic damage is the match that lights the fire, and inflammation is the fuel that feeds it**."

The most common cancers-colon cancer, stomach cancer, esophageal cancer, lung cancer, liver cancer, breast cancer, cervical cancer, ovarian cancer, prostate cancer, and pancreatic cancer have all been linked to inflammation. Sometimes inflammation directly causes cancer, like the match stick that starts the fire. In other cases, inflammation causes an already established cancer to grow and spread more, which is like pouring "gasoline" on cancer's flame.

Conclusion

Inflammation is an aspect of just about every disease model today. In the next chapter we will go deeper into cancer and inflammation, but realize this could be applied to a wide diversity of diseases. In simplest terms, oxygen deprivation coming from CO_2/bicarbonate deficiencies in the blood lead to broad based oxidative stress and thus to cellular distress. Hydrogen saves the day; but if we also treat causal issues like CO_2 deficiency and include some form of oxygen therapy we have a better chance than anyone in turning around the most difficult medical situations.

[xlv] Hyperbaric Hydrogen Therapy: A Possible Treatment for Cancer Author(s): Malcolm Dole, F. Ray Wilson, William P. Fife Source: Science, New Series, Vol. 190, No. 4210 (Oct. 10, 1975), pp. 152-154 Published by: American Association for the Advancement of Science Stable URL: http://www.jstor.org/stable/1740947

[xlvi] Oxid Med Cell Longev. 2012; 2012: 353152. Molecular Hydrogen as an Emerging Therapeutic Medical Gas for Neurodegenerative and Other Diseases

[xlvii] Med Gas Res. 2011; 1: 18. Molecular hydrogen protects chondrocytes from oxidative stress and indirectly alters gene expressions through reducing peroxynitrite derived from nitric oxide

[xlviii] Expression of Metalloproteinases MMP-2 and MMP-9 in Sentinel Lymph Node and Serum of Patients with Metastatic and Non-Metastatic Breast Cancer

[xlix] Cytotechnology. 2012 May; 64(3): 357-371. Suppressive effects of electrochemically reduced water on matrix metalloproteinase-2 activities and in vitro invasion of human fibrosarcoma HT1080 cells

[l] PeerJ. 2015; 3: e859. Hydrogen-water enhances 5-fluorouracil-induced inhibition of colon cancer

[li] Cancer Chemotherapy and Pharmacology. September 2009, 64:753. Molecular hydrogen alleviates nephrotoxicity induced by an anti-cancer drug cisplatin without compromising anti-tumor activity in mice.

[lii] Int J Biol Sci. 2011; 7(3): 297-300. Hydrogen Protects Mice from Radiation Induced Thymic Lymphoma in BALB/c Mice

[liii] Saitoh Y, Okayasu H, Xiao L, Harata Y, Miwa N. Neutral pH hydrogen-enriched electrolyzed water achieves tumor-preferential clonal growth inhibition over normal cells and tumor invasion inhibition concurrently with intracellular oxidant repression. *Oncology Research*. 2008;17(6):247-255. [PubMed]

[liv] M. Lee, Y. Kim, K. Ryoo, Y. Lee and E. Park, "Electrolyzed-reduced (Hydrogen Rich) Water Protects against Oxidative Damage to DNA, RNA and Protein," Appl Biochem Biotechnol, pp. 135(2):133-44, 2006.

[lv] Why Cancer and Inflammation? Seth Rakoff-Nahoum; Yale J Biol Med. 2006 December; 79(3-4): 123-130. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1994795/

Intelligent Cancer Treatment



If using highly dangerous cancer-causing radiation to diagnose and treat cancer is the best modern medicine can come up with then we should feel sorry for humans as well as the practice of modern medicine. Oncologists are good at cutting, burning and poisoning cancer with surgery, radiation, and drugs, but they fail to treat the cause of cancer.

They try to help but usually do more harm than good. Oncologists focus on naming cancer based on geography and body location. They pay little to no attention to the cause of the cancer. Obviously, there are mechanisms and pathways that lead to cancer, but traditional doctors are simply not interested in helping patients and their families avoid cancer or its reoccurrence. They prove this by treating and diagnosing cancer in the most dangerous ways possible, never telling their patients all the good things they can do for themselves.

Instead of asking what cancer and what chemo agent should be used the intelligent thing to do is diagnose WHY the cancer has occurred. What are the underlying causes that lead to cancer and other illnesses? Modern medicine approaches illness like a mechanic trying

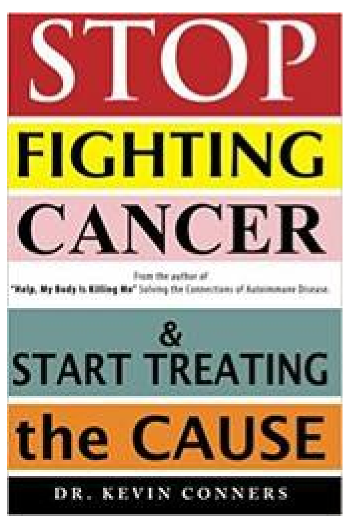
to diagnose what's wrong with your car by listening to the noises it makes and never looking inside to see what's going on. However, it is easy to look under the hood.

Even without a battery of expensive medical tests we can profile the basic physiological parameters of each patient (one can do this at home no doctor needed) thus giving us methods for identifying the conditions in which a person's cancer thrives. It is just too difficult for doctors to use simple pH measuring strips to get an idea of a patients overall internal physical condition and even more difficult for them to count how fast a person is breathing.

> In the 1920s Dr. Otto Warburg carried out a great deal of work on cancer's basic mechanism and was awarded a Nobel Prize in 1932. Warburg's work clearly demonstrated that cancer is, fundamentally, a relatively simple disease where cell oxygen levels fall to a level sufficiently low enough for the cell to change in nature. Without a dependable supply of oxygen, the cells in our bodies cannot function properly. Nutrients in our diets must have oxygen present to convert their potential energy into usable energy. For new cells to be formed, hundreds of amino acids must link together using oxygen as the source of their energy.

If we work at changing conditions that we can easily measure, we have a chance of healing ourselves of cancer; without cutting, burning and poisoning with surgery, radiation and nasty chemotherapy (which is the process of poisoning people in clear daylight). Better idea would be to bomb the cancer to smithereens with Oxygen!

A Functional Medicine Approach to Cancer



Functional medicine empowers patients and practitioners to achieve the highest

expression of health by working collaboratively to address the root causes of disease. Many times, we feel healthy, but something is brewing under the hood that we are not aware of. That lack of awareness can lead to cancer. Health is the obvious answer to disease including cancer but we must occasionally look under the hood to ascertain if our oxygen levels are too low, if we are blowing off too much carbon dioxide (breathing too fast), if our immune system is functioning normally because of our appropriate body temperature, and so on.

Almost everyone knows (except oncologists) that cancer results from low oxygen levels forcing cells to abandon oxygen respiration in favor of fermentation, a very dirty and inefficient form of energy production. However, it is not so simple, because not only do healthy cells throw in the towel when deprived of oxygen, they are also suffering from high levels of oxidative stress and inflammation. Now, however, we even have inexpensive machines that can measure oxidative stress. And it is easy to diagnose inflammation; anytime we are in pain there is inflammation. Pain is inflammation.

Into this mix comes the bugs, all kinds of them. Viruses, bacteria and fungus love bathing in low oxygen conditions, with fungus cells sharing many if not all the traits of cancer cells. That is why some people believe cancer is a fungus. They breathe and live the same way!

Infections Cause Lots of Cancer

Cancer-always believed to be caused by genetic cell mutations-can in reality be caused by infections from viruses, bacteria, and fungi. "I believe that, conservatively, 15 to 20% of all cancer is caused by infections; however, the number could be larger-maybe double," said Dr. Andrew Dannenberg, director of the Cancer Center at New York-Presbyterian Hospital/Weill Cornell Medical Center. Dr. Dannenberg made the remarks in a speech in December 2007 at the annual international conference of the American Association for Cancer Research.

Given enough time, cancer will develop whenever there is a proliferation of damaged cells. When cells are damaged, when their cell wall permeability changes, when toxins and free radicals build up, when the mitochondria lose functionality in terms of energy ATP production, when pH shifts strongly to the acidic, when essential gasses like oxygen and carbon dioxide are not present in sufficient concentrations, and when essential nutrients are absent, cells eventually decline into a cancerous condition.

Many Causes of Cancer

Add to the above mix the complications of heavy metal, chemical and radiation toxicities our cells suffer from, the fact that our immune system suffers greatly from low body temperature (think thyroid problems), nutritional deficiencies, acid conditions, and emotional, mental and sexual stress and then things certainly do not seem simple anymore.

Instead of dividing everything into diseases and labels, Functional Medicine approaches disease as a systemic problem. Instead of treating the symptom a more intelligent medical paradigm addresses and treats the cause. Classifying tumors by body site - lung, liver, brain, breast, colon, etc. - misses the underlying causes, mechanisms, and pathways involved in most cancers.

We Need to Change

Our society is experiencing a sharp increase in the number of people who suffer from complex, chronic diseases such as diabetes, heart disease, cancer, mental illness, and autoimmune disorders like rheumatoid arthritis and life killing diseases like Parkinson's and Alzheimer's Disease. People who do not want to change and learn things that go against this tide will go down with the ship by joining this increasing host of desperately ill people.

Modern medicine shines best when dealing with acute disease, with the treatment of trauma, with urgent care such as appendicitis or a broken leg. Unfortunately, the acute-care approach to medicine does not even work with something as simple as the flu, so too many people die from it. Without doubt doctors lack the proper methodology and tools for preventing and treating complex, chronic disease. They are following the wrong paradigm for both diagnosing and treating chronic disease. For them the entire process boils down to coming up with a label of the disease, so they can prescribe the right drug or surgery without ever touching upon causes.

The bottom line to orthodox medical treatments is to use diagnosis and treatments that cause cancer to treat cancer. A perfect example is mammography. Every mammogram a woman gets increases her risk of breast cancer by 5% due to the radiation involved and mammograms frequently lead to over-diagnosis and unnecessary treatment. It gets worse with CAT and PET Scans; and God forbid one accepts radiation treatments for cancer that greatly accelerate our race to the grave.

What happens to healthy people who let doctors constantly test them with dangerous cancer causing radiation? What happens to people who allow dentists to pack cancer-causing mercury into their teeth? What happens to healthy people who drink cancer

causing fluoride in their water or to people who live downwind from coal fired electrical plants or crematoriums that emit mercury or who live too near nuclear power stations? The list is endless and even includes living too near cell towers, which are impossible to get away from in cities.

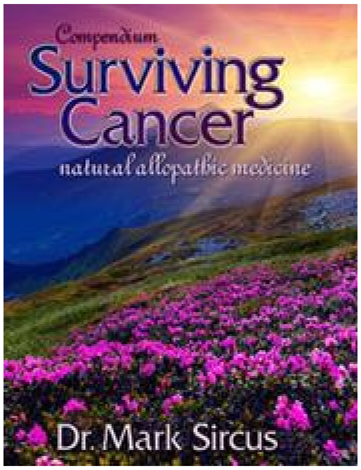
Iodine, Thyroid, Oxygen and pH Connection

Oxygen is our gasoline; our thyroid provides the spark, it is the spark plug the allows the flame of metabolism to be lit. Low thyroid increases oxygen cost, hinders metabolism and forces us to breathe more which increases the oxygen cost of breathing. We may get more energy immediately, but the oxygen cost is high. Our engine overworks to make up for the "dirty spark plugs" of our thyroid and parathyroid glands. A lack of thyroid hormones leads to a general decrease in the rate of utilization of fat, protein, and carbohydrate. The burning of our foods does not run cleanly when iodine is deficient, so we would expect oxygen and CO_2 to be affected.

Selenium Included

According to a study that was published in the Journal of the American Medical Association on December 25, 1996, people who had taken selenium had 63% fewer prostate cancers, 58% fewer colorectal cancers, 46% fewer lung cancers and overall 37% fewer cancers. Selenium was found to reduce the risk of lung cancer to a greater degree than stopping smoking. Thus, obviously selenium should be part of every cancer treatment because it prevents many genetic mutations. Magnesium is also important in dealing with or avoiding cancer.

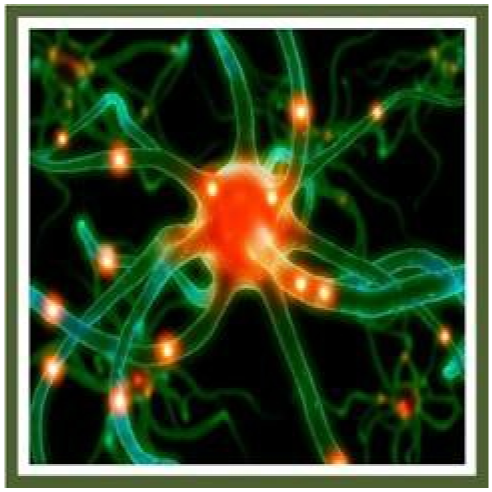
Conclusion



The *Surviving Cancer Compendium* is like an army field hospital set-up guide for patients who want to treat themselves in the comfort of their own home. I consult and teach people how to do this in desperate situations no matter where they live with the compendium being a complete textbook and reference guide. The compendium is 2,500 pages long. It sets a new precedent in cancer information and care.

Unfortunately, the compendium is not up to date for it does not include my more recent work with *Hydrogen Medicine*, which you are reading now. In this essay I have tried as best as possible to simplify things so new cancer patients can get something steady under their feet. Until I can up-date the compendium I have just informed my staff to greatly reduce the price of the compendium from its original price of $249 down to $79.

Cancer, Inflammation and Hydrogen



Numerous publications reveal that the biological and medical benefits of H_2 reduce oxidative stress not only by direct reactions with strong oxidants, but also indirectly by regulating various gene expressions. Moreover, by regulating the gene expressions, H_2 functions as an anti-inflammatory and anti-apoptotic, and stimulates energy metabolism.[lvi]

Because we can define cancer as inflammation, we can employ hydrogen to win our battle against it. Dr. Johannes Fibiger was a Danish scientist, physician, and professor of pathological anatomy who won the Nobel Prize in Physiology and Medicine in 1926 for achieving the first controlled induction of cancer in laboratory animals, a development of profound importance to cancer research.

In 1907, while dissecting rats infected with tuberculosis, he found tumors in the stomachs of three animals. After intensive research, he concluded that the tumors, apparently malignant, followed an inflammation of stomach tissue caused by the larvae of a worm now known as Gongylonema neoplasticum. The worms had infected cockroaches eaten by the rats.

By 1913 he was able to induce gastric tumors consistently in mice and rats by feeding them cockroaches infected with the worm. By showing that the tumors underwent metastasis, he added important support to the then-prevailing concept that cancer is caused by tissue irritation.

Fibiger's work immediately led the Japanese pathologist Yamagiwa Katsusaburo to produce cancer in laboratory animals by painting their skins with coal-tar derivatives, a

procedure soon adopted by Fibiger himself. While later research revealed that the Gongylonema larvae were not directly responsible for the inflammation, Fibiger's findings were a necessary prelude to the production of chemical carcinogens (cancer-causing agents), a vital step in the development of modern cancer research.

In Latin, the word "inflammation" means "ignite, set alight" and like gasoline, that's exactly what it does to cancer. A microenvironment of chronic inflammation sets the stage for cancer. Most importantly, inflammation promotes the spreading and mutating of cancer cells while continuing to push the mutations within the cancer cells' development.

Oxidative stress is widely thought to play an important role in the pathogenesis of inflammation. Since we have already found that hydrogen gas and hydrogen water have the effect of eliminating free radicals and oxidative stress we know it will have a profound role in reducing inflammation.

According to the National Cancer Institute, considerable laboratory evidence from chemical, cell culture, and animal studies indicates that **antioxidants may slow or possibly prevent the development of cancer**. Antioxidants are nutrients (vitamins and minerals) as well as enzymes (proteins in your body that assist in chemical reactions). They are believed to play a role in preventing the development of such chronic diseases as cancer, heart disease, stroke, Alzheimer's disease, Rheumatoid arthritis, and cataracts.

Hydrogen is the ultimate antioxidant so it should do a lot to help us win our personal war on cancer. Cancer patients, who are interested in humane treatments, who do not want to suffer under the crushing weight of intensely toxic chemotherapy, and then radiation, will be very interested in hydrogen cancer treatments, backed by oxygen and CO_2 therapy, and then a list of vital minerals and even a concentrated form of medical marijuana as a natural form of chemotherapy.

Cancer Starts with Inflammation



There is a strong association between chronic, ongoing inflammation in the body and the occurrence of cancer. Biologists have been able to follow the inflammation link down to the level of individual signaling molecules, providing harder evidence for a connection to carcinogenesis. We already know that inflammation is the root of pain and most illnesses like diabetes and heart disease, but we are just beginning to pay attention to the significant and centralized role that inflammation plays in the development and sustainment of cancer.

According to Dr. Alexander Hoffmann, an assistant professor of chemistry and biochemistry at U.C. San Diego, "We have identified a **basic cellular mechanism that we think may be linking chronic inflammation and cancer**. Studies with animals have shown that a little inflammation is necessary for the normal development of the immune system and other organ systems," explains Hoffmann. "We discovered that the protein p100 provides the cell with a way in which inflammation can influence development. But there can be too much of a good thing. In the case of chronic inflammation, the presence of too much p100 may over-activate the developmental pathway, resulting in cancer."

Inflammation has long been associated with the development of cancer. Scientific American says, "Understanding chronic inflammation, which contributes to heart disease, Alzheimer's and a variety of other ailments, may be a key to unlocking the mysteries of cancer." Inflammation is the fuel that feeds cancer. It certainly is a key event in cancer development.

"Inflammatory responses play decisive roles at different stages of tumor development, including initiation, promotion, malignant conversion, invasion, and metastasis. Inflammation also affects immune surveillance and responses to therapy. **Immune cells that infiltrate tumors engage in an extensive and dynamic crosstalk with cancer cells**," says researchers from Departments of Pharmacology and Pathology, School of Medicine, University of California in San Diego.

Dr. Sergei I. Grivennikov writes, "The presence of leukocytes within tumors, observed in the 19th century by Rudolf Virchow, provided the first indication of a possible link between inflammation and cancer. Yet, it is only during the last decade that clear evidence has been obtained that inflammation plays a critical role in tumorigenesis, and some of the underlying molecular mechanisms have been elucidated. A role for inflammation in tumorigenesis is now generally accepted, and it has become evident that an inflammatory microenvironment is an essential component of all tumors. **Only a minority of all cancers are caused by germline mutations**, whereas the vast majority (90%) are linked to somatic mutations and environmental factors."

An inflammatory microenvironment inhabiting various inflammatory cells and a network of signaling molecules are also **indispensable for the malignant progression** of transformed cells, which is attributed to the mutagenic predisposition of persistent infection-fighting agents at sites of chronic inflammation. Chronic inflammation is a slow, silent disturbance that never shuts off. Often a patient can't feel it. Often you can't be tested for it.

Research regarding inflammation-associated cancer development has focused on cytokines and chemokines as well as their downstream targets in linking inflammation and cancer. Chronic inflammation due to infection or to conditions such as chronic inflammatory bowel disease is associated with up to 25 percent of all cancers. A study by researchers at the Ohio State University Comprehensive Cancer Center found that inflammation stimulates a rise in levels of a molecule called microRNA-155 (miR-155).

This, in turn, causes a drop in levels of proteins involved in DNA repair, resulting in a higher rate of spontaneous gene mutations, which can lead to cancer. "Our study shows that miR-155 is upregulated by inflammatory stimuli and that overexpression of miR-155 increases the spontaneous mutation rate, which can contribute to tumorigenesis," says first author and post-doctoral researcher Dr. Esmerina Tili. "People have suspected for some time that inflammation plays an important role in cancer, and our study presents a molecular mechanism that explains how it happens."

Dr. Vijay Nair's book *Prevent Cancer, Strokes, Heart Attacks and other Deadly Killers* says, "Colon cancer, stomach cancer, esophageal cancer, lung cancer, liver cancer, breast cancer, cervical cancer, ovarian cancer, prostate cancer, and pancreatic cancer have all been linked to inflammation. This is great news, because it means that cancer doesn't just strike out of nowhere. It's preventable!"

"All types of inflammation can cause cancer. Lung cancer can be caused by chronic smoke-induced inflammation. Esophageal cancer can be caused by acid reflux-induced

inflammation. Stomach cancer can be caused by H. pylori (the bacterium that causes ulcers) -induced inflammation. Bladder cancer can be caused by urinary tract infection-induced inflammation. Liver cancer can be caused by hepatitis B or C-induced inflammation. Lymphoma can be caused by Epstein Barr (the virus that causes mononucleosis) -induced inflammation. Cervical cancer can be caused by Human papillomavirus (the virus that causes genital warts) -induced inflammation. Kidney cancer can be caused by kidney stone-induced inflammation. And colon cancer can be caused by irritable bowel syndrome-induced inflammation. Whether the inflammation is caused by an infection (such as hepatitis), a mechanical irritant (such as kidney stones), or a chemical irritant (such as stomach acid), the result is the same. Chronic, low-grade inflammation greatly increases your risk of developing cancer."

Dr. Otis Brawley, chief medical officer of the American Cancer Society, said he believes that aspirin's anti-inflammatory properties may play a role in the prevention of both heart disease and cancer. "Inflammation may not cause a cancer, but it may promote cancer-it may be the fertilizer that makes it grow," Dr. Brawley said.

A new MIT study[lvii] offers a comprehensive look at chemical and genetic changes that occur as inflammation progresses to cancer. One of the biggest risk factors for liver, colon or stomach cancer is **chronic inflammation of those organs, often caused by viral or bacterial infections.** Orthodox cancer treatments do not treat inflammation, thus they do not really treat cancer.

The role of heavy metals is very important in the rise of cancer rates.[lviii],[lix] We are poisoning the world over and over again with heavy metals and our brain cells and other tissues are suffering for it. Over 80% of heavy metals are removed from the body via the friendly bacteria in the gut but unfortunately we have had maniacs in control of western medicine encouraging doctors to over use antibiotics, which kill off the friendly bacteria in the gut. **Heavy metal contamination creates inflammation!**

The effects of 2% H_2 treatment was investigated on the survival rate and organ damage in zymosan-induced generalized inflammation model. Zymosan, which is prepared from baker's yeast (Saccharomyces cerevisiae), is a reagent that has been widely used for many years in inflammation and immunology researches.

The beneficial effects of H_2 treatment in zymosan-induced organ damage were associated with decreased levels of oxidative product, increased activities of antioxidant enzyme, and reduced levels of early and late pro-inflammatory cytokines in serum and tissues. H_2 treatment protected against multiple organ damage in a zymosan-induced generalized inflammation model, suggesting the potential use of H_2 as a therapeutic

agent in the therapy of conditions associated with inflammation-related multiple organ dysfunction syndrome.[lx]

[lvi] Pharmacology & Therapeutics. Volume 144, Issue 1, October 2014, Pages 1-11

Molecular hydrogen as a preventive and therapeutic medical gas: initiation, development and potential of hydrogen medicine

[lvii] A. Mangerich, C. G. Knutson, N. M. Parry, S. Muthupalani, W. Ye, E. Prestwich, L. Cui, J. L. McFaline, M. Mobley, Z. Ge, K. Taghizadeh, J. S. Wishnok, G. N. Wogan, J. G. Fox, S. R. Tannenbaum, P. C. Dedon. **PNAS Plus: Infection-induced colitis in mice causes dynamic and tissue-specific changes in stress response and DNA damage leading to colon cancer**. *Proceedings of the National Academy of Sciences*, 2012; DOI: 10.1073/pnas.1207829109

[lviii] http://www.psr.org/environment-and-health/confronting-toxics/heavy-metals/

[lix] Toxic metals and breast cancer; http://www.townsendletter.com/AugSept2007/toxicmetalbreastcancer0807.htm

[lx] Hydrogen gas improves survival rate and organ damage in zymosan-induced generalized inflammation model. Xie K, Yu Y, Zhang Z, Liu W, Pei Y, Xiong L, Hou L, Wang G. Shock. 2010 Nov; 34(5):495-501.

Oxygen Deficiency and Cancer



These days many people do not have enough oxygen in their bodies to support the daily functions of our internal and external organs. Many of us are deficient for a wide variety of reasons. When we learn that **each stressful event in our life can drop our oxygen score drastically** we can begin to understand how central to successful treatment oxygen can be.

Severe oxygen deficiency is called hypoxia, often referred to as oxygen starvation. This affliction invites cardiac trouble by over-stimulating the sympathetic nervous system and raising the heart rate.

Symptoms of Oxygen Deficiency:

· Increased Infections

· Tumors

· Sexual dysfunction

· Irrational behavior

· Irritability

· Muscle aches and pains

· Lung insufficiencies

· Dizziness

· Depression

· Headaches

· General body weakness

· Weight Gain

· Cancer and Disease

· Fatigue and Sleep Disorders

· Suppression of the Immune System

· Circulation Problems

· Poor Digestion

· Memory Loss & Poor Concentration

· Hangovers

Dr. Dominic D'Agostino, a researcher and assistant professor with the University of South Florida Morsani College of Medicine, said "cancer is starved" by eating a diet that is restricted in carbohydrates but high in certain fats. The patient then receives hyperbaric chamber treatments, in which oxygen has a further toxic effect on the cancer cells, explaining a possible one-two punch to knock out cancer.

D'Agostino began research nine years ago involving metabolic therapy and hyperbaric oxygen to help Navy SEAL divers avoid seizures from oxygen toxicity. A 10-year-old boy with a cancerous brain tumor who had already received a battery of traditional conventional radiation therapy has gotten positive results from this. The youth responded "remarkably" to the combination of diet and hyperbaric treatment.

The diet mimics fasting and can lead the body to a state of "ketosis" - which Web MD states is a condition when the body burns its own fat for fuel. "Ketones are substances that are made when the body breaks down fat for energy. Normally, your body gets the energy it needs from glucose (sugar)," the website states.

"Cancer cells use glucose (to grow) but ketones can't readily be used by cancer cells,"

D'Agostino said. "(Certain) levels of oxygen (are) toxic to cancer," he said, adding that the hyperbaric chambers are now used to promote healing in cancer patients undergoing radiation therapy.

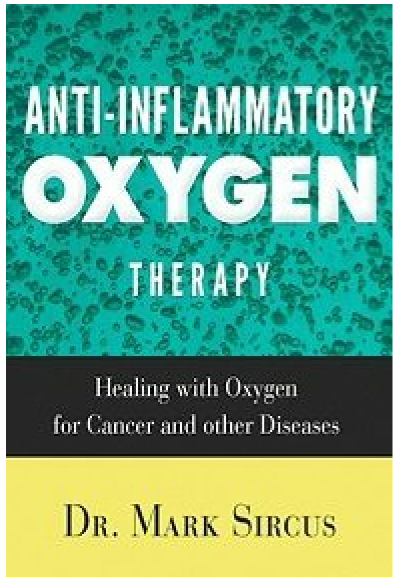
Researchers at The University of Texas MD Anderson Cancer Center have unearthed a previously unknown phenomenon. They found that important regulatory molecules are decreased when **deprived of oxygen, which leads to increased cancer progression in vitro and in vivo**.

As tumors grow, they can outgrow their blood supply, leaving some of the tumor with areas where the tissue is oxygen starved, a condition known as tumor hypoxia. Conventional wisdom would suggest the lack of oxygen would slow growth. However, the opposite is true. Hypoxia leads to tumor progression.

"We showed that that hypoxia causes a down regulation of, or decrease in, quantities of Drosha and Dicer, enzymes that are necessary for producing microRNAs (miRNAs). MiRNAs are molecules naturally expressed by the cell that regulate a variety of genes," said Dr. Anil Sood, professor of gynecologic oncology and reproductive medicine and cancer biology. "At a functional level, this **process results in increased cancer progression** when studied at the cellular level."

Cancer cells greatest vulnerability is oxygen since it is a deficiency of oxygen that initiates the cancer process. Cancer hates high levels of oxygen. O**xygen makes cancer cells weak and susceptible to treatment. Cancer cells low in oxygen are three times more resistant to radiotherapy.** Restoring oxygen levels to that of a normal cell makes the tumors three times more sensitive to treatment. T**umors having large areas with low levels of oxygen (areas known as hypoxic regions) are associated with poor prognosis and treatment response.** Intensifying a patient's oxygen status will add significantly to the effectiveness of other cancer treatments both natural or toxic chemotherapy.

Physicians just do not want to admit it but breathing is the core driver of all physiology. It is that important because it is that close to the beat of life from one moment to another. Oxygen and carbon dioxide both are the most basic nutrients the body needs from second to second and water comes in right behind these two most necessary gasses. So one can treat cancer directly with profound changes in breathing.



Anti-Inflammatory Oxygen Therapy is the process of avalanching down on the cells a massive amount of oxygen-in other words-a massive amount of life force. In the never-ending fight against cancer as well as the aging process, intense oxygen therapy gives us an edge.

The therapy is called EWOT (Exercise with Oxygen Therapy) or originally Oxygen Multi Step Therapy, which was dramatically improved with the invention and use of the air reservoir bag (See below). In fifteen minutes, one can blow the cells' doors open allowing them to detoxify as they gulp down an avalanche of oxygen. The breakthrough is that this therapy actually returns vascular age back to youthful levels.

One of the reasons exercise is so healthy and important for cancer patients is that it creates massive amounts of CO_2. Exercise is good medicine. Several studies have found that physical activity can lower a woman's risk for breast cancer, and some studies found that the most active women have about a 25% lower chance of developing the disease than the least active women. " Exercise is one of the best things women can do for themselves," says Dr. Ann Partridge, director of the Program for Young Women with Breast Cancer at Dana-Farber Cancer Institute.

Anti-Inflammatory Oxygen Therapy consists of two distinct therapies-exercise and oxygen that are brought together for maximum effect. Breathing in concentrated oxygen while exercising makes the exercising easier and that is good news for patients suffering from long-term chronic disease.

Stopping metastasis is a great achievement. This can be achieved if enough oxygen is present. Cancer hates oxygen! Enough oxygen will cause cancer cells to die.

Administering enough oxygen will remove the low oxygen areas, those corners or browned out tissues, which are vulnerable to cancerous invasions. Enough oxygen will fire up the white blood cells and put them into a killing frenzy.





MaxxO2 is simply the best EWOT system out there. The new mask makes breathing in massive amounts of oxygen easier. The Max O2 system offers not only the highest quality oxygen reservoir, but also a **patented rib cage that puts pressure on the bag to force the air out and into the mask** for a remarkable increase in oxygen flow and ease of use. Also the reservoir bag does not leak like a sieve.

From the company we read, "it is all about the mask:"

We have created the best oxygen bag in the industry. It's commercial grade with positive pressure, but that was not good enough. Our bag and mask had to be the best. The traditional blue mask had been used by our competitors and us. The problem with this mask is the valves are hard to open as you breathe in and exhale. In addition, they are "one size fits all." Maxx 02 includes an industry first unrestricted high-flow Easy Breathe� system. The flow opening for oxygen is twice the size of the leading mask. It feels like you are breathing without a mask and it is available in three sizes for superior fit. In fact, we include the older style mask at no charge so you can see the difference yourself. It is easy to tell you it is better, but we go one-step further by letting you try for yourself.

Hydrogen and Life



The world will eventually go to a hydrogen economy with the Chinese already creating the first hydrogen city. Hydrogen is the answer for clean unlimited energy and it is the answer for the future of medicine. Life itself is an economy based on hydrogen, which is in an intimate dance with oxygen, which is paired with carbon dioxide.

Oxygen can be pumped into the body through a variety of means. Yet oxygen can be dangerous. Oxygen is certainly toxic without CO_2. Hydrogen also mitigates the toxicity of oxygen by putting out the fires of oxidative stress. Thus, the three gases dance.

Hydrogen comes in different forms. Some forms make you sick and other forms make you feel better. Too much H^+ in the body turns the body acidic, which diminishes oxygen's ability to reach the cells. "pH" actually means the "Power of Hydrogen" so the more hydrogen ions you have in solution the more acidic a solution is. Solutions with a high concentration of hydrogen ions have a low pH and solutions with a low concentrations of H^+ ions have a high pH. pH is a measure of hydrogen ion activity.

The reason the H^+ carries a positive charge is because it has lost an electron. It is effectively dead, acidifying, damaging, and degenerating. Not good news at all for the body when acidity builds up. Too many H^+ ions flying around will do damage to the body.

Scientifically, pH means potential hydrogen and measures the H+ (hydrogen) ions in the body-which is a measure of voltage as well. When we increase oxygen and pH levels we are simultaneously increasing cellular voltage. Molecular hydrogen (H_2) lowers the concentration of H+ ions.

In this book we are mostly talking about molecular hydrogen (H_2), a hydrogen molecule with no charge. Acid conditions are measured by hydrogen ions with a positive charge, which are dangerous because they are looking to steal of molecules of electrons. Acidity all has to do with hydrogen ions (abbreviated with the chemical symbol H+). In water (H_2O), a small number of the molecules dissociate (split up). Some of the water molecules lose a hydrogen and become hydroxide ions (OH^-). The "lost" hydrogen ions join up with water molecules to form hydronium ions (H_3O^+). For simplicity, hydronium ions are referred to as hydrogen ions H+. In pure water, there are an equal number of hydrogen ions and hydroxide ions. The solution is neither acidic or basic.

An acid is, after all, a substance that donates hydrogen ions. Because of this, when an acid is dissolved in water, the balance between hydrogen ions and hydroxide ions is shifted. Now there are more hydrogen ions than hydroxide ions in the solution. This kind of solution is acidic.

A base is a substance that accepts hydrogen ions. When a base is dissolved in water, the balance between hydrogen ions and hydroxide ions shifts the opposite way. Because the base "soaks up" hydrogen ions, the result is a solution with more hydroxide ions than hydrogen ions. This kind of solution is alkaline.

Acidity and alkalinity are measured with a logarithmic scale called pH. Here is why: a strongly acidic solution can have one hundred million million, or one hundred trillion (100,000,000,000,000) times more hydrogen ions than a strongly basic solution! The flip side, of course, is that a strongly basic solution can have 100,000,000,000,000 times more hydroxide ions than a strongly acidic solution. Moreover, the hydrogen ion and hydroxide ion concentrations in everyday solutions can vary over that entire range.

Jon Barron's way of looking at pH (voltage).

> "Hydrogen ions tie up oxygen. That means that the more acid a liquid is, the less available the oxygen in it. Every cell in our body requires oxygen for life and to maintain optimum health. Combine that with what we know about hydrogen ions and we see that the more acid the blood (the lower its pH), the less oxygen is available for use by the cells. Without going into a discussion of the chemistry involved, just understand that it's the same mechanism involved

> when acid rain "kills" a lake. The fish literally suffocate to death because the acid in the lake "binds up" all of the available oxygen. It's not that the oxygen has gone anywhere; it's just no longer available. Conversely, if you raise the pH of the lake (make it more alkaline), oxygen is now available and the lake comes back to life. Incidentally, it's worth noting that cancer is related to an acid environment (lack of oxygen)-the higher the pH (the more oxygen present in the cells of the body), the harder it is for cancer to thrive."

Oxygen is a switch hitter depending on its atomic states and so can act as a metabolic oxidizer, a more powerful immune oxidizer in singlet radical configuration, or as an "antioxidant" as it turns acidic protons to water when it mops-up after the process of respiration. Oxygen recharges pH buffers and conserves electrons. Over-fueled/under-oxygenated cells will become acidic and further repel and deplete oxygen. It is also important to note that oxygen can be present but not used. There is plenty of oxygen present in cancer cells. The problem is that it sits around inside those cells but is not used. The mitochondria are either dead or completely impaired, so the cancer cell has already turned to fermentation as an alternative energy source.

Voltage is a Measure of pH

If a body is in an acidic (low voltage) state, cells become sluggish, energy and mitochondrial activity diminish, and the cells are forced to steal minerals from the bones and vital organs.

As our voltage drops and pH becomes more acidic (more H^+) our breathing changes. The rate and depth of breathing is controlled by arterial CO_2/pH. The breathing of severely sick people is fast and shallow. This makes things worse as cells become oxygen deficient.

Sodium bicarbonate is an important medicine because it brings more carbon dioxide to the body, and especially the blood, in the form of bicarbonates. Bicarbonate in the blood is easily turned into carbon dioxide (CO_2). The reverse is true in biochemical reactions that happen almost at the speed of light. The bottom line to what happens when one takes sodium bicarbonate orally is that it turns to CO_2 in the stomach driving bicarbonates into the blood, which helps deliver more useful oxygen inside the cells.

Negatively Charged Hydrogen

When H^- gives up an electron it becomes H_2 and can be further used just as the H_2 we take orally and breathe in. H^- is a hydrogen atom with an extra electron - yes 2 electrons. The outer electron is weakly bound and therefore the atom gives up that

electron readily. For this reason H- is a powerful antioxidant, not only because of its added electron but also because it reforms itself into molecular hydrogen (H_2) to do its job again.

This charge difference makes H- ions travel differently in the body than H_2 (molecular hydrogen). H- may preferentially seek out positively charged particles (free-radicals and NAD+ for example) whereas H_2 may just diffuse everywhere.

Molecular hydrogen, containing two protons and two electrons, is neutral so it does not take up as much space electromagnetically. This means it will slip into cells more easily than electrons, which are much smaller. A cell will resist any charged molecule, but not molecular hydrogen. So, neutral molecules of hydrogen get into the cell and into the mitochondria with ease and speed, where they do a lot of good.

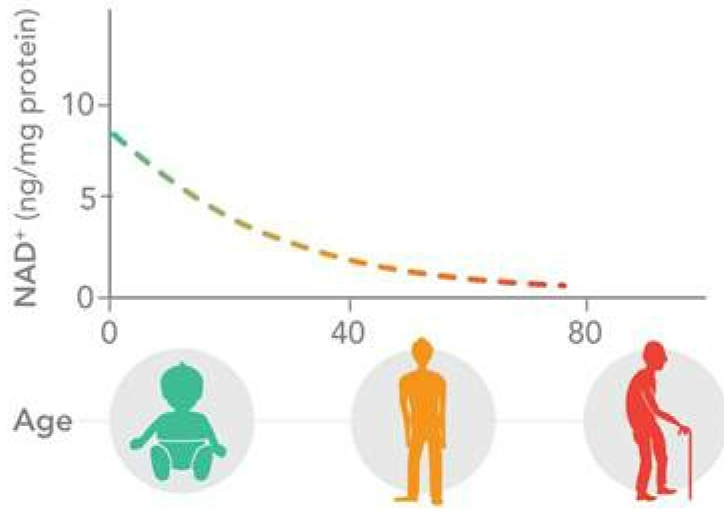
Hydrogen Bonds are the Foundation to Life

In living organisms, carbon and hydrogen partner easily. The element carbon has two orbiting layers, called shells, surrounding its nucleus. The outer shell contains four electrons. These four electrons can form separate covalent bonds with other elements, which means that they bond together by sharing electrons. Hydrogen has only one electron to share, so it can bond only once. However, up to four hydrogen atoms can bond to one carbon atom.

Hydrogen has some unique properties. Sometimes it shares electrons unequally with an electronegative atom, such as oxygen or nitrogen. When this happens, hydrogen develops a slight positive charge, which attracts other negatively charged particles. Opposites attract, so they bond together without sharing electrons. This is called a hydrogen bond. These are weak but useful in living organisms for forming short-lived connections.

Scientific American says, "Recent research suggests it may be possible to reverse mitochondrial decay with dietary supplements that increase cellular levels of a molecule called NAD (nicotinamide adenine dinucleotide)."

NAD+ is Essential for Life

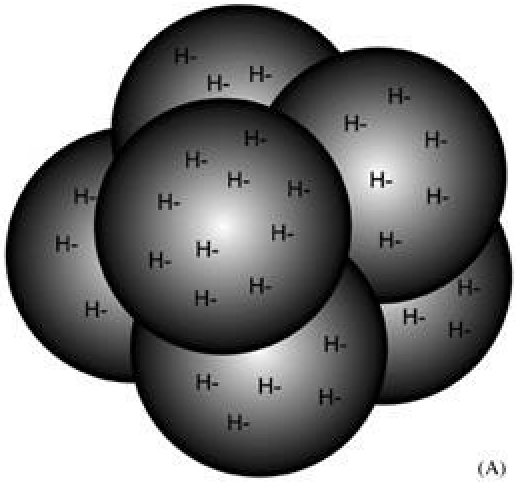


NAD+ is a molecule found in every cell of the body. It is used to power metabolism, construct new cellular components, resist free radical and DNA damage and send signals within the cells. It enables the mitochondria - the 'powerhouses of the cell' to convert the food we eat into the energy our body needs to sustain all its functions. NAD+ is also required to "turn off" genes implicated in accelerating aging processes.

Healthy mitochondrial function is an important component of healthy human aging. Our body naturally has the ability to make NAD+ from components in the food we eat. Research in laboratory animals and people shows that as we age, levels of NAD+ decline substantially. This decline leaves us at greater risk for neuro and muscular degeneration, for declines in our cardiometabolic health and in our capacity for repair and resiliency.

NAD+ boosters have now become the party favourite in many health circles, in part because they're not drugs. They are natural products that restore body chemistry to a more youthful state. By age 50, NAD+ levels are half what they were at 20. Top up NAD+ levels in elderly mice and their muscles becomes like those of youngsters, their stem cells get more 'oomph' and they live longer.

H- gives up an election to NAD+ to produce NADH. The NADH is then processed in the electron transport system to product 3 ATP molecules. Normally the Krebs cycle produces NADH, but the H- makes it possible to bypass the Krebs cycle by recycling NAD+ to NADH.



NAD+ boosters are in vogue and even NASA has been seduced. It hopes to use NAD+ to repair the DNA of astronauts bombarded by cosmic rays over the year a trip to Mars would take. DNA damage is one of the main factors linked to ageing. Now attention is turning to hydrogen, which does much more than the NAD+ boosters presently available on the market.

Conquering Infections with Oxygen and Alkalinity

"The Secret of Life is both to feed and nourish the cells and let them flush their waste and toxins", according to Dr. Alexis Carrell, Nobel Prize recipient in 1912. Dr. Otto Warburg, also a Nobel Prize recipient, in 1931 & 1944, said, "If our internal environment was changed from an acidic oxygen deprived environment to an alkaline environment full of oxygen, viruses, bacteria and fungus cannot live."

> Certain viruses (including rhinoviruses and coronaviruses that are most often responsible for the common cold and influenza viruses that produce flu) infect host cells by fusion with cellular membranes at low pH. Thus they are classified as "pH-dependent viruses."
>
> Fusion of viral and cellular membranes is pH dependent. "The plasma membrane of eukaryotic cells serves as a barrier against invading parasites and viruses. To infect a cell, viruses must be capable of transporting their genome and accessory proteins into the host cell, bypassing or modifying the barrier properties imposed by the plasma membrane. Entry into the host cells always involves a step of membrane fusion for enveloped animal viruses. Other enveloped viruses such as orthomyxoviruses, alphaviruses or rhabdoviruses enter the cells by the endocytic pathway, and fusion depends on the

> acidification of the endosomal compartment. Fusion at the endosome level is triggered by conformational changes in viral glycoproteins, induced by the low pH of this cellular compartment."

As it is with viral infections, so it is with cancer. The external pH of solid tumors is acidic as a consequence of increased metabolism of glucose and poor perfusion. Acid pH has been shown to stimulate tumor cell invasion and metastasis in vitro, and in cells before tail vein injection in vivo.[lxi]

Treating cancer with the triad of hydrogen, oxygen and CO_2 increases voltage, alkalinity and oxidative metabolism. Focusing cancer treatment on these three gases as a necessary part of all cancer treatment makes sense because it treats the fundamental reasons cancer cells form and become aggressive.

[lxi] Bicarbonate Increases Tumor pH and Inhibits Spontaneous Metastases; Ian F. Robey,1; Cancer Res 2009; 69: (6). March 15, 2009;

What Kind of Medical Treatment for my Condition



That is a big question, sometimes the most important in our lives, and if we get the answer wrong it could cost us our life or the lives of loved ones. The wrong answer is to never ask the question and blindly follow what your doctors say. He will only answer with what he is told his medical associations and licensing boards answer. Although there are courageous doctors who distance themselves from the lock-step of modern medicine, they are too few.

There are many forks in the medical world. If you add in alternative medicine the choices seem to be unlimited. There are literally hundreds of people and companies who think they have the right answer but the answer to our question cannot be triggered by marketing or by anyone's personal opinion.

Where do we start in medicine? What are the first considerations we need to make either by clinicians, of which there are various types, or even by mothers who take the main responsibility of making health and medical decisions in the family?

There are cases that can be made for many starting points but we need something universal that we can agree on. Water (hydration) is always a main and immediate

concern. So is breathing, as every emergency doctor and nurse knows.

Hydrogen First

Doctors and everyone else need to understand that the first course of action is to flood the body with hydrogen, oxygen and carbon dioxide. We already know that properly used medical gases can change patients presenting condition in emergency situations. However, conditions that have not responded to oxygen will respond if hydrogen is added to the mix.

There is no medical mystery here. Deepsea divers know this. At the deepest depths hydrogen is life. As we shall see in the following chapter on medical gases, many lessons can be learned about hydrogen from the field of hyperbaric medicine. Doctors in this field know about medical priorities and the first course of action for when a diver comes up too fast and gets the bends.

The deeper divers go the more stress/pressure they are under. The deeper they go the more hydrogen needs to be in their tanks and, interestingly enough, the less oxygen.

Hydrogen is new to intensive care treatment, as it is to the entire world of modern medicine. However, we can see that hydrogen belongs right up there with oxygen in intensive care and that hydrogen belongs in first place in most protocols for the treatment of disease. It would be hard indeed to think of something hydrogen would not be good for.

Hydrogen is also the perfect anti-aging medicine, and will eventually find itself everywhere. Women will completely embrace it once they find out what it will do for their skin. Actually hydrogen is already everywhere. Life is not possible without hydrogen.

Full Medical Protocol

This book will deal with H_2, O_2, CO_2, and H_2O. In a later edition we will include O_3 (Ozone) and even singlet oxygen, which is a temporary state of highly energized oxygen. For a fuller protocol all we have to do is add sulfur, magnesium, iodine, selenium, potassium, bicarbonates, sodium and infrared therapy. Then we have the main ingredients necessary to save lives. Medical Marijuans could be added to this list of essentials in dealing with cancer and other diseases.

Simple Diagnostics

We need only the simplest of tests to help us understand a person's presenting condition. With this information we can make decisions on how to regulate H_2O, CO_2, oxygen and hydrogen levels to create the most charged healing environments in tissues and cells.

The color of the urine tells us instantly how much water is needed to get a person fully hydrated. A person's breathing rate and pH of urine and saliva will tell us about CO_2/bicarbonate levels in the blood and the general state of oxygen in the body. Oxygen analysis is also helped by an Oximeter. As to a patients overall presenting situation in terms of pain, length and severity of illness, energy levels-the worse the condition the more hydrogen, and probably oxygen, is needed.

Intravenous Vitamin C cannot compete with molecular hydrogen's ability to diffuse rapidly into the tissues and cells while remaining mild enough to neither disturb metabolic redox reactions nor affect reactive oxygen species (ROS) that function in cell signaling.

Hydrogen for Psychiatric Disorders



Bogdan Cristel / Reuters

Antidepressants are one of the most commonly prescribed drugs in the United States, but their side effects and trial-and-error nature often leave something to be desired. According to some studies, they are only about 50 percent more effective than placebo. Until recently most doctors and patients have still thought that these drugs are the best treatment we have for a disease that many people find crippling. Now hydrogen gas is showing a promise to replace these obscene drugs.

In the United States, there are one million children under the age of six on psychiatric drugs. This number is particularly disturbing, considering the horrifying side effects and ineffectiveness of these types of harmful drugs.

One in six Americans overall regularly take some type of medication in this category. However, children are now being swept up in pharmaceutical terrorism. Mental health watchdog group Citizens Commission on Human Rights is drawing attention to the concerning fact that more than a million kids younger than six in our nation are currently taking these psychiatric drugs. Data from IMS Health shows that the drug situation only gets worse as kids get older, **with 4,130,340 kids aged 6 to 12 taking some type**

of psychiatric drug.

Babies Given Psychiatric Drugs

Around half of these children are four to five years old and an incredible 274,804 of them are younger than a year old. The number rises for toddlers aged two to three, with 370,778 kids in this category taking psychiatric drugs overall. The biggest category of psychotic drugs given to children appears to be anti-anxiety drugs. Just over 227,132 babies under one-year-old and nearly 248,000 of those aged four to five take these medications. However, e**xperts believe these estimates are far too low** and the real numbers are actually much higher, due in part to the tendency for some doctors to hand out psychiatric medications for "off-label" uses.

In European nearly 4 out of 15 people suffer from major depression and anxiety. Neuropsychiatric disorders are the second cause of disability in Europe and account for 19% in comparison to cardiovascular disorders with only 4%. In 28 countries of EU with a population of 466 million, at least 21 million people were affected by depression, out of which almost 80% are men. The treatment of psychiatric disorders is very expensive. The total annual cost of depression in Europe was estimated at Euro 118 billion in 2004, which corresponds to a cost of Euro 253 per inhabitant. The cost of depression corresponds to 1% of the total economy of Europe.[lxii]

Hydrogen for the Brain

Hydrogen gas, because of its anti-inflammatory and anti-oxidative properties overlaps with the process of neuro-progression in major psychiatric disorders. The generation of oxidatively generated free radicals is core to life and is normally tightly controlled. However, there is now increasing data on the presence and impact of oxidative stress among diverse psychiatric disorders including bipolar disorder, schizophrenia, and autism. Therefore, it is hypothesized that administration of hydrogen molecule may have potential as a novel therapy for bipolar disorder, schizophrenia, and other concurrent disorders characterized by oxidative, inflammatory and apoptotic dysregulation.[lxiii]

Because of its low molecular weight, hydrogen can easily diffuse across the blood-brain barrier, which allows it protects cells against degeneration and improves brain function. Chen et al.[lxiv] found that the protective effect of hydrogen in the brain is accompanied by reducing the oxidative stress and blood glucose levels after dextrose injection in rats. It has also been reported that drinking hydrogen-rich pure water prevent superoxide formation in brain slices of vitamin C-depleted SMP30/GNL-knockout mice during hypoxia-re-oxygenation[lxv]. Molecular hydrogen has also been shown to prevent

cognitive decline. Consumption of hydrogen water suppressed the increase in oxidative stress and prevented stress-induced impairments in hippocampus-dependent learning tasks during chronic physical restraint in mice[lxvi].

Specifically, both bipolar disorder and schizophrenia are associated with increased oxidative and inflammatory stress. Moreover, lithium which is commonly administered for treating bipolar disorder has effects on oxidative stress and apoptotic pathways, as do valproate and some atypical antipsychotics for treating schizophrenia. Molecular hydrogen has been studied pre-clinically in animal models for the treatment of some medical conditions including hypoxia and neurodegenerative disorders, and there are intriguing clinical findings in neurological disorders including Parkinson's disease.

Mitochondrial dysfunction in schizophrenia is frequently reported. Moreover, mitochondrial disorders can present with psychosis. mtDNA plays a role in the neurobiology of schizophrenia. Mitochondrial gene expression is changed in schizophrenia. The numbers of mitochondria in schizophrenia is reduced compared to normal controls. As we have seen hydrogen has a positive effect on the mitochondria, so it should be utilized as a first line of treatment for schizophrenia.

In Parkinson's disease, increased oxidative stress indexed by elevated lipid peroxidation and decreased reduced glutathione levels in the substantia nigra are part of the known pathogenesis of PD. Hydrogen water also prevents a rat model of Parkinson's disease[lxvii] and increases survival after cerebral ischemia/reperfusion[lxviii]. It down-regulates 4-hydroxy-2-nonenal, a marker of oxidative stress in dopaminergic neurons within the substantia nigra of animal models of Parkinson's disease.

[lxii] https://www.hindawi.com/journals/omcl/2015/248529/

[lxiii] Med Gas Res. 2013 Jun 6;3(1):11. doi: 10.1186/2045-9912-3-11. Molecular hydrogen: an overview of its neurobiological effects and therapeutic potential for bipolar disorder and schizophrenia.

[lxiv] Chen CH, Manaenko A, Zhan Y, Liu WW, Ostrowki RP, et al. (2010) Hydrogen gas reduced acute hyperglycemia-enhanced hemorrhagic transformation in a focal ischemia rat model. Neuroscience 169: 402-414.

[lxv] Sato Y, Kajiyama S, Amano A, Kondo Y, Sasaki T, et al. (2008) Hydrogen-rich pure water prevents superoxide formation in brain slices of vitamin C-depleted SMP30/GNL knockout mice. Biochem Biophys Res Commun 375: 346-350.

[lxvi] Nagata K, Nakashima-Kamimura N, Mikami T, et al. (2009) Consumption of

molecular hydrogen prevents the stress-induced impairments in hippocampus-dependent learning tasks during chronic physical restraint in mice. Neuropsychopharmacology 34: 501-508.

[lxvii] Ito M. et al. Drinking hydrogen water and intermittent hydrogen gas exposure, but not lactulose or continuous hydrogen gas exposure, prevent 6-hydorxydopamine-induced Parkinson's disease in rats. Med Gas Res. 2012;2(1):15. doi: 10.1186/2045-9912-2-15. [PMC free article]

[lxviii] Zhang J. et al. Effect of hydrogen gas on the survival rate of mice following global cerebral ischemia (Shock 37(6), 645-652, 2012) Shock. 2012;38(4):444. [PubMed]

Less Food and Less Diabetes with Hydrogen



Hydrogen is vital for life, the most common element in the human body and a component of water, DNA and most other organic molecules. Macronutrients, such as carbohydrates, proteins and fats, contain hydrogen as part of the chemical structure. This means that every food contains some hydrogen.

Fruits and whole grains are healthy sources of carbohydrates, which in turn are sources of hydrogen. Carbohydrates, also called sugars, are molecules that contain carbon, hydrogen and oxygen. The chemical structure for glucose, the simple sugar your cells use to metabolize energy, has six atoms of carbon, 12 atoms of hydrogen and six atoms of oxygen.

Meat, poultry, fish, dairy and legumes are proteins made up of amino acids that are sources of hydrogen. The chemical structure of amino acids may differ, but all amino acids contain carbon, hydrogen, oxygen and nitrogen. Fats, also called lipids, are a type of macronutrient made up of carbon, hydrogen and oxygen.

Little attention is paid to hydrogen's role in the food chain, yet it is the continued oxidative stress leads to chronic inflammation continued oxidative stress leads to chronic inflammation continued oxidative stress leads to chronic inflammation most essential ingredient in food as Patrick Flanagan, the original hydrogen researcher, states. When we look at the dynamics of a healthy person inhaling and drinking lots of hydrogen we

see evidence of the fact that providing hydrogen in a gas form substitutes, to an extent, for the hydrogen the body has to strip off of foods during the process of digestion.

So we should expect people to be nurtured and sustained by hydrogen. I have been in contact with people who experienced the nurturing aspect of hydrogen. One was a sixty year old man who was digging out a foundation with lots of young helpers and he could do it all day keeping up with and even exceeding the energetic nature of the young, eating only one meal a day but spending two hours a day inhaling hydrogen and oxygen, and drinking hydrogen water. Another person had end stage cancer with a tumour blocking spinal fluid. He not only staged a miracle recovery but experienced rapid weight gain.

This is very important in life extension because we know that less is more, that restricting calorie intake increases the lifespan in every species studied. The rough rule of thumb is: restrict calorie intake by 30% and see up to a 30% increase in lifespan. The more we run on hydrogen, that comes from sources that does not require insulin, the more heightened will be the anti-aging effect of hydrogen. Researchers discovered that NAD+ levels decline with age but is raised by calorie restriction and exercise.

Insulin's job of course is to mobilise the body to respond to food intake. Like a warehouse overseer receiving a stock delivery, the hormone is released into the blood to ensure many systems are quickly mobilised. The insulin 'receptor' conveys these signals to the body tissues so nutrients are used as needed or stored as fat.

Calorie restriction induces a reduction in the insulin signalling pathways (both through IGF-I and insulin), and this reduction in insulin signalling is thought to be one of the primary mechanisms through which calorie restriction acts to increase lifespan.

High blood insulin levels are usually the result of high blood glucose levels. So high levels of insulin signalling are a signal of high "nutritional state," which shifts cell's internal states toward increased levels of growth and decreased levels of repair. Increases in growth and decreases in repair equal increases in waste products that accumulate within a cell and that ultimately cause aging at the cellular level.

Hydrogen has no calories, yet can send rockets into space. Hydrogen burns cleaner than any other fuel. When we look at the fact that food is our fuel, and hydrogen being the easiest and cleanest fuel to run on, we start to get other ideas about why hydrogen is such a useful medicine and why it will extend our lives.

Diabetes

Talking about calorie restriction and the powerful positive effects it has on our bodies it makes it a good moment to also talk about diabetes and what many holistic practitioners have known for years. Doctors in Newcastle and Glasgow England report on a new study finding that nearly half of patients have reversed type 2 diabetes in a "watershed" trial.

In the study people spent up to five months on a low-calorie diet of soups and shakes to trigger massive weight loss. Isobel Murray, for example, aged 65, who had weighed 15 stone, lost over four stone (25kg) and no longer needed diabetes pills. She says: "I've got my life back." Isobel was one of 298 people on the trial.

Her blood sugar levels were too high. Every time she went to the doctors they increased her medication. So, she went on to the all-liquid diet for 17 weeks - giving up cooking and shopping. She even ate apart from her husband, Jim. Instead, she had four liquid meals a day.

The trial results, simultaneously published in the Lancet medical journal and presented at the International Diabetes Federation, showed:

> 46% of patients who started the trial were in remission a year later
>
> 86% who lost 15kg (2st 5lb) or more put their type 2 diabetes into remission
>
> Only 4% went into remission with the best treatments currently used

Prof Roy Taylor, from Newcastle University, told the BBC, "Before we started this line of work, doctors and specialists regarded type 2 as irreversible."

There is plenty of evidence that molecular hydrogen would make the process of recovering from diabetes easier. Hydrogen improves obesity and diabetes by inducing hepatic FGF21 and stimulating energy metabolism in animal studies.[lxix] Supplementation of hydrogen-rich water improves lipid and glucose metabolism in patients with type 2 diabetes or impaired glucose tolerance.[lxx]

Hydrogen rich water:

- reduces oxidative stress in the liver and reduces liver fat
- suppresses body-weight gain and reduced blood glucose and triglyceride levels
- shows a similar effect to diet restriction
- increases the level of FGF21 (a protein that regulates energy expenditure, protects from obesity caused by overeating, and lowers blood glucose and triglyceride levels) in the liver
- stimulates energy metabolism

Scientists had struggled to understand how ingesting the small amount of hydrogen contained in hydrogen rich water could have such significant clinical effects. One study showed that hydrogen is accumulated and reserved in the liver by attaching to glycogen molecules.

Organs and muscles in the body use glucose as fuel. Carbohydrates, protein and fats need to be converted to glucose to be used. Glycogen is the form in which glucose is stored in both muscles and the liver. From the liver, glycogen can be released to be used as energy by organs and muscles in the body when required. H_2 accumulates in liver glycogen stores after being consumed via Hydrogen Rich Water. This means that H_2 is available to be used as an antioxidant and anti-inflammatory when required by the body.

Liver glycogen is the form in which glucose is stored for use by every organ and muscle in the body. When glucose is needed by any part of the body, that organ or muscle is also receiving H_2. Therefore, the body's antioxidant mechanisms are improved, and this decreases the free radical damage to the body. As free radical damage is one of the main contributing factors to the development of diabetes it is thought that this increase in antioxidant functions in the body can impede the development of diabetes. Mice receiving H_2 water had lower levels of molecules that indicate free radical damage; in fact the H_2 mice had levels of these molecules that were almost the same as non-diabetic mice.

Subcutaneous injection of H_2 has also been used in animal studies and has been shown to "significantly improve type 2 diabetes mellitus and diabetic nephropathy-related outcomes in a mouse model. The bodyweight of H_2 treated mice did not change over the course of the experiment yet compared with the untreated control animals, glucose, insulin, low-density lipoprotein and triglyceride levels in the serum were significantly lower in treated mice, whereas high-density lipoprotein cholesterol in the serum was significantly higher. Glucose tolerance and insulin sensitivity were both improved in H_2 - treated mice. Diabetic nephropathy analysis showed significant reductions in urine volume, urinary total protein and β2-microglobulin, kidney/bodyweight ratio, and kidney fibrosis associated with subcutaneous injection of H_2."[lxxi]

Diabetes is inflammatory disease caused by a combination of factors including stress, chemical and heavy metal toxicity, radiation exposure, magnesium, iodine and bicarbonate deficiencies; and nutritional imbalances focused on excessive carbohydrate intake that all come together to burn the cellular house down in slow motion. Sugar excess and dehydration work to create inflammation in the body. This starts a long

process that ends up with people facing major diseases including cancer.

"Monitoring of blood-sugar levels, insulin production, acid-base balance, and pancreatic bicarbonate and enzyme production before and after test exposures to potentially allergic substances reveals that the pancreas is the first organ to develop inhibited function from varied stresses, writes Dr. William Philpott and Dr. Dwight K. Kalita in their book Brain Allergies.

Dr. Lisa Landymore-Lim in her book *Poisonous Prescriptions* explains how many drugs used by the unsuspecting public today, are involved in the onset of impaired glucose control and diabetes. It is easy to provoke diabetes in experimental animals with heavy metals like arsenic, mercury and even fluoride. People are being poisoned with foods full of pesticides, herbicides, preservatives, food additives and mercury, just to mention a few poisons that plague everyone on earth.

Magnesium is Essential for Diabetics

Reversing insulin resistance is the first step to reversing diabetes and heart disease. Low serum and intracellular magnesium concentrations are associated with insulin resistance, impaired glucose tolerance, and decreased insulin secretion. Magnesium improves insulin sensitivity thus lowering insulin resistance. Magnesium and insulin need each other. Without magnesium, our pancreas will not secrete enough insulin-or the insulin it secretes will not be efficient enough-to control our blood sugar.

A study published in the journal *Clinical Nutrition* from a team of Brazilian researchers has found that low levels of magnesium worsen the symptoms of type 2 diabetes, as this often results in low levels of insulin and elevated blood sugar. A diabetic's ability to control blood sugar levels is directly tied to their magnesium levels. The mineral plays an important role in insulin receptor cells.

Another study published in the journal *Diabetes, Obesity and Metabolism* found that taking *oral magnesium supplements* helps individuals, who have become insulin resistant, avoid developing type 2 diabetes.

Magnesium improves insulin sensitivity thus lowering insulin resistance. Insulin resistance and magnesium depletion result in a vicious cycle of worsening insulin resistance and a decrease in intracellular magnesium. In addition, magnesium is an important cofactor for enzymes involved in carbohydrate metabolism; so anything threatening magnesium levels threatens overall metabolism.

Over 68% of the U.S. population is magnesium deficient, and up to 80% of *Type 2*

diabetics are deficient since they waste more magnesium than others, due to out-of-control blood sugar levels. These estimates understate the problem since the tests used to measure magnesium are blood, not cellular levels, of this vital mineral. People with diabetes waste more magnesium due to increased urination from elevated and fluctuating blood sugars, and so need to replenish their magnesium stores constantly.

A Tufts study led by Adela Hruby found that healthy people with the highest magnesium intake were 37% less likely to develop high blood sugar or excess circulating insulin, common precursors to diabetes. Among people who already had those conditions, those who consumed the most magnesium were 32% less likely to develop diabetes than those consuming the least.

Diabetes and Sodium Bicarbonate

Parhatsathid Napatalung from Thailand writes, "The pancreas is harmed if the body is metabolically acid as it tries to maintain bicarbonates. Without sufficient bicarbonates, the pancreas is slowly destroyed, insulin becomes a problem and hence diabetes becomes an issue. Without sufficient bicarbonate buffer, the effect of disease is far reaching as the body becomes acid."

The pancreas is a long, narrow gland which stretches from the spleen to about the middle of the duodenum. It has three main functions. First, it provides digestive juices, which contain pancreatic enzymes in an alkaline solution to provide the right conditions for the digestive process to be completed in the small intestines. Second, the *pancreas produces insulin,* the hormone that controls blood sugar by the metabolism of sugar and other carbohydrates. Thirdly, it produces bicarbonate to neutralize acids coming from the stomach in order to **provide the right environment** for the pancreatic enzymes to be effective.

Allergies generally start with the body's inability to produce a certain enzyme, or to produce enough enzymes for the digestive process to work effectively. **In conjunction with this is an inability to produce enough bicarbonate essential for the pancreatic enzymes to function properly.** When this happens undigested proteins penetrate the bloodstream inducing more allergic reactions. Inflammation in such a scenario is systemic but can focus on the pancreas, forcing decreases in the production of bicarbonate, insulin and necessary enzymes.[lxxii]

The bicarbonate ion acts as a buffer to maintain normal levels of acidity (pH) in blood and other fluids in the body. Bicarbonate levels are measured to monitor the acidity of the blood and body fluids. Acidity is affected by foods or medications that we ingest, and

also by the function of the kidneys and lungs. The chemical notation for bicarbonate on most lab reports is HCO_3^- or represented as the concentration of carbon dioxide(CO_2).

The normal serum range for bicarbonate is 22-30 mmol/L. A bicarbonate test is usually performed along with tests for other blood electrolytes. Disruptions in normal bicarbonate levels may be due to diseases that interfere with respiratory function, kidney diseases, metabolic conditions and a failing pancreas. The pancreas, an organ largely responsible for pH control,[lxxiii] is one of the first organs affected when general pH shifts to the acidic.

[lxix] Obesity (Silver Spring). 2011 Jul;19(7):1396-403. doi: 10.1038/oby.2011.6. Epub 2011 Feb 3.

[lxx] Nutr Res. 2008 Mar;28(3):137-43. doi: 10.1016/j.nutres.2008.01.008.

[lxxi] J Diabetes Investig. 2017 Apr 8. doi: 10.1111/jdi.12674

[lxxii] www.docstoc.com/docs/24767241/Allergy-Effects-On-The-Pancreas-And-Small-Intestine/

[lxxiii] Epithelial cells in pancreatic ducts are the source of the bicarbonate and water secreted by the pancreas. Bicarbonate is a base and critical to neutralizing the acid coming into the small intestine from the stomach. The mechanism underlying bicarbonate secretion is essentially the same as for acid secretion parietal cells and is dependent on the enzyme carbonic anhydrase. In pancreatic duct cells, the bicarbonate is secreted into the lumen of the duct and hence into pancreatic juice.

Serious Medicine for the Skin

1st and 2nd Degree Burns:



Here are two pictures. The first is after boiling hot tea burned my wife's stomach with a 1st degree burn (I gave her a hot cup of tea as she was sitting up in bed. She had put lotion on her hands and I didn't know they were slippery). It was very painful, and she was quite worried because of the large area and pain involved. She said it wasn't bad at first, but got really painful as time went on.

I bubbled hydrogen into water for 10 minutes in an aluminum container, poured it into a larger glass so she could get her fingers in it, and had her dab it on her stomach.



The second picture is 30 minutes later. The redness is completely gone, and the pain was receding, and she said it then felt "furry" when her shirt would rub against it. That was at 11:00 PM that night. She was able to sleep with no discomfort. The following morning, she had no pain whatsoever. This is the second time H2 has been tested against 1st and 2nd degree burns and both times it was successful within minutes.

Sunburn and Hydrogen:

Another time I was out all day in the sun and got sunburn on my face, neck and area around the neck near the shoulders. I have a 4 oz. aluminum spray bottle that I infused with H2 for 5 minutes and then sprayed the area several times in 30 minutes. The results were amazing, as the pain dissipated rapidly. After several days from the event here are the result of the experiment:

The H2 infused water:

- Took the pain and discomfort away rapidly.
- DID lessen the pain when you rubbed the skin on the surface.

· DID NOT lessen the pain if you squeezed the skin together (deeper damage?).

· DID NOT lessen the redness/color.

· DID soften the skin.

· My skin DID NOT peel - other than a very fine layer - NOT the normal skin peeling off in large patches.

· The skin color is now normal tan color.

· My wrinkles are going away!

Hydrogen and Beautiful Young Skin



Famed dermatologist Dr. Nicholas Perricone believes harnessing hydrogen is a far more efficacious way to wage war on wrinkles. A recent Japanese study in the Journal of Photochemistry and Photobiology confirmed what locals had been preaching for years. They found that bathing in hydrogen water every day for three months can reduce neck wrinkles. Similarly, a control group of UV-damaged human fibroblasts (the cell responsible for producing collagen in your skin) were shown to increase collagen production twice over after being soaked in hydrogen water for 72 hours.

Molecular hydrogen has been proven to have antioxidant properties, helping to remove free radicals from your body that cause premature aging of the skin. Women and beauty experts are jumping on the hydrogen bandwagon because they can SEE the beautifying

effects of hydrogen administration.

We tend to forget that the skin is the largest and most important of human organs. If we can see hydrogen in action on the skin with our eyes, we can imagine, without all the scientific studies, that it has a similar effect on internal organs and how they will age.

Water is a Hydrogen Rich Substance

All cells in our body need water to function and stay healthy. If you don't drink adequate water, your cells will suffer from dehydration. Hence drinking hydrogen-rich water, which hydrates better than normal water, will give you moister younger skin.

It is helpful when thinking of hydrogen gas, either inhaled or dissolved in water, to think of water itself, which is obviously a hydrogen rich substance. When you do not drink enough water, when you do not provide enough hydrogen, your skin will show dryness, tightness and flakiness. The less moisture on your skin, the more it will be more prone to wrinkling and age.

Treatment of Pain with Hydrogen Protocol



A hydrogen led protocol for pain will change the entire equation for how pain is treated. Whether it's caused by arthritis, migraines, fibromyalgia, or bad backs, chronic pain -- the kind that hangs on for weeks, months, or years can change your life for the worse. Never ignore pain because that usually leads to it getting worse. Whatever the intensity or the cause, treatments usually can help if the right type of treatment is chosen. The problem is finding the right treatment that works to heal the underlying condition.

The International Association for the Study of Pain's widely used definition states: "Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage." In medical diagnosis, pain is regarded as a symptom of an underlying condition.

US National Library of Medicine says:

> Pain is a signal in your nervous system that something may be wrong. It is an unpleasant feeling, such as a prick, tingle, sting, burn, or ache. Pain may be sharp or dull. It may come and go, or it may be constant. You may feel pain in one area of your body, such as your back, abdomen, chest, pelvis, or you may feel pain all over.
>
> Pain can be helpful in diagnosing a problem. If you never felt pain, you might seriously hurt yourself without knowing it, or you might not realize you have a medical problem that needs treatment.

> There are two types of pain: acute and chronic. Acute pain usually comes on suddenly, because of a disease, injury, or inflammation. It can often be diagnosed and treated. It usually goes away, though sometimes it can turn into chronic pain. Chronic pain lasts for a long time and can cause severe problems.
>
> Pain is not always curable, but there are many ways to treat it. Treatment depends on the cause and type of pain. Pain relievers and other medicines, acupuncture, physical therapy, and sometimes surgery may be helpful.

Wikipedia writes:

> Pain motivates the individual to withdraw from damaging situations, to protect a damaged body part while it heals, and to avoid similar experiences in the future. Most pain resolves once the noxious stimulus is removed and the body has healed, but it may persist despite removal of the stimulus and apparent healing of the body. Sometimes pain arises in the absence of any detectable stimulus, damage or disease.
>
> Pain is the most common reason for physician consultation in most developed countries. It is a major symptom in many medical conditions, and can interfere with a person's quality of life and general functioning. Simple pain medications are useful in 20% to 70% of cases.

Pain is a distressing feeling often caused by intense or damaging stimuli. Because it is a complex, subjective phenomenon, defining pain has been a challenge. Almost all pain can be defined as inflammation.

Acute pain and chronic pain can be treated in many ways, yet modern medicine has chosen ways which lead to more pain and grief. The opioid medical emergency highlights this fact. Deaths linked to misuse and abuse of prescription opioids increased to nearly 19,000 in 2014, the highest figure on record, according to the Centers for Disease Control and Prevention.

> "After ten years still on his pain killers, Hale was popping so many of the highly addictive pills that he regularly ran out of his prescription early. His doctor cut off his supply and urged Hale to enter a detox program. That didn't work. Hale, still in agonizing pain and now suffering from intense withdrawal symptoms, returned to his doctor and pleaded to get back on his opioid regime. The doctor refused. The next day, Hale put the barrel of a small-gauge gun in his mouth and pulled the trigger."

Opioids are now the leading cause of death among Americans under the age of 50. Between 2002 and 2015, more than 202,600 Americans died from overdosing on opioids. The massive increase in opioid sales has been blamed on an orchestrated marketing plan aimed at misinforming doctors about the addictive potential of these drugs.

Management of chronic pain, if you are operating in the mainstream medical paradigm, often requires the coordinated efforts of a pain management team, which typically includes medical practitioners, clinical pharmacists, clinical psychologists, physiotherapists, occupational therapists, physician assistants, and nurse practitioners. This might be all fine and good if one can afford this but the medical system, even when it is fully engaged, often cannot resolve a person's problems.

Everyone in pain is looking for a way out. When we are still in pain it means we have not gotten to the root of it. And then there is the suffering of heart and soul, which might not be physically sourced but still lays heavily on the body and its functioning. Depression is the best example, with depressed people more likely to die of cancer, for instance, than the non-depressed. The most reliable method for assessing pain in most humans is by simply asking a person. However, they may report pain that cannot be detected by any known physiological measure.

Back Pain



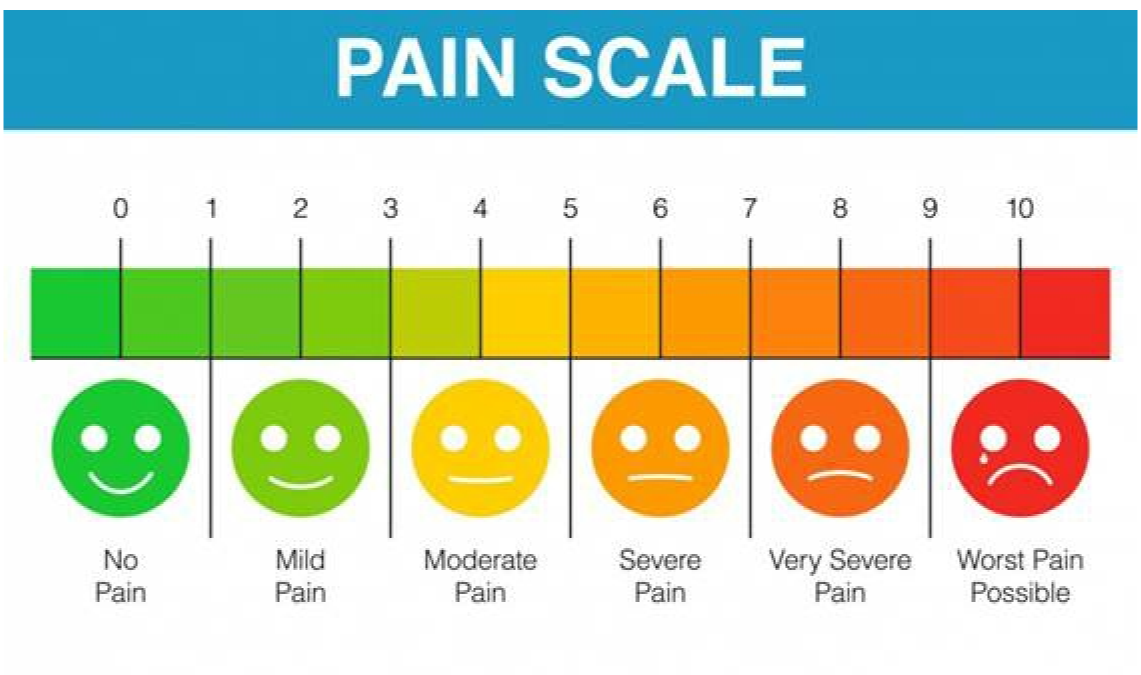
Thirty-one million Americans experience low-back pain at any given time. One-half of all working Americans admit to having back pain symptoms each year. Back pain is one of the most common reasons for missed work. In fact, back pain is the second most common reason for visits to the doctor's office, outnumbered only by upper-respiratory

infections. Nearly everyone at some point has back pain that interferes with work, routine daily activities, or recreation.

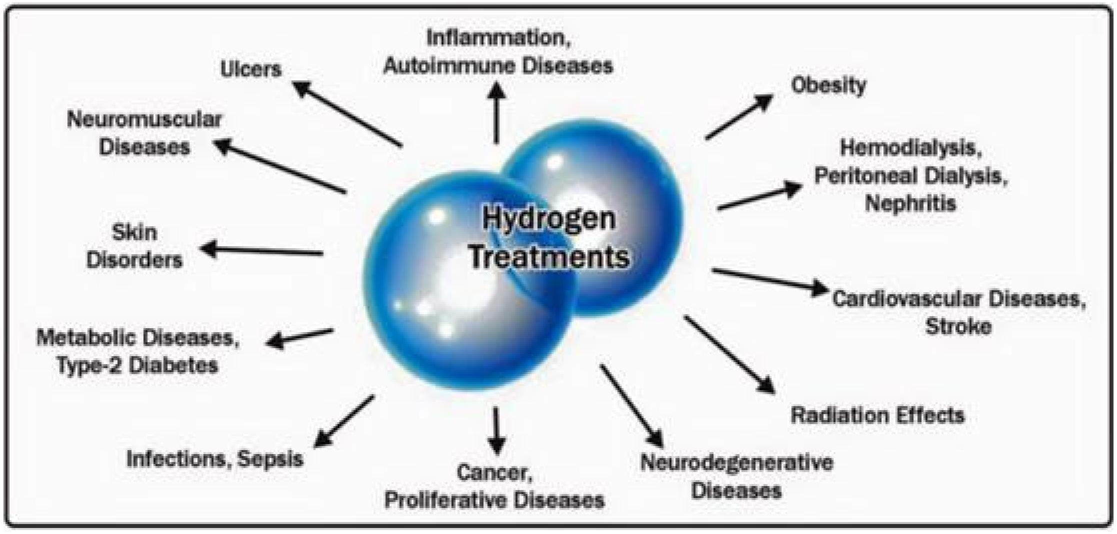
As many as 80% of us will experience a back problem at some time in our lives and yet if you look around at the medical literature and even at alternative sites, including chiropractic and osteopathic sites, one does not get a clear picture of what one can do for this common problem, which lands many in bed with excruciating pain.

Back and neck pain can be miserable. Injury, herniated disc, spinal stenosis, osteoarthritis, vertebral compression fracture-even a simple back sprain-can cause life-altering pain. Yoga, massage and physical therapies help patients to get back on their feet but often do not address the biochemistry of back pain.

My favorite medicines for back pain have always been magnesium, infrared and medical marijuana but now one has to think seriously of flooding hydrogen into the body because it will zero in on places of inflammation and pain. Hydrogen has penetration power, into the bones, joints, tendons and ligaments.



Hydrogen Dosages



Several doctors are experiencing good results - both personally and with their patients offering 30-60 minute sessions 2-3 times a week with the inhalation machine and then working with the VR hydrogen tablets for their daily dose when they are not breathing H2. The key to understanding hydrogen supplementation dosages though is it is to be taken over the long term not for a "just a month and you're cured" type of mentality.

I suggest 1 or 2 tabs on an empty stomach morning, noon and night for best results. Hydrogen dosages should be compared to taking daily vitamins meaning it should be incorporated in a daily routine that becomes permanent.

Higher dosages are needed for anyone seriously ill with flu or any chronic disease. When one needs to dig out of a dark pit of medical despair, hydrogen will provide the muscle along with high dosages of magnesium (80 mg included with every tablet) and just the right amount of bicarbonate to raise pH to a more alkaline state. Of course, this all changes if one is using a hydrogen inhaler, which enables patients to take in hydrogen at much higher dosages.

The newest generation of hydrogen tablets offer hydrogen dissolved in water at very high parts per million. Personally I use slightly cool water and add two tablets to a very large glass of water. As soon at the tablets dissolve drink the water reasonably quickly to get the most hydrogen. If your water is very cold it takes a little longer.

If one is putting the tablets in a closed bottle, then it the temperature of the water does not matter. I like higher doses of H2 taken at once. Higher dosages are in order after

heavy exertion, air travel, lack of sleep, intense exercise, lots of stress, etc. Normally though, when in good health, I would recommend taking one tablet two or three times a day.

To get the full benefit from a hydrogen inhaler, or preferably from a hydrogen oxygen inhaler, use it for two hours a day. For a healthy state this dosage has a strong anti-aging effect.

If someone is dying, or suffering from late stage cancer, hydrogen is key. Just hook them up to a machine and keep breathing until improvement is obvious. Hydrogen inhalation can also be done while sleeping.

General Information on Dosages



When using nutritional medicines like magnesium chloride, iodine, sodium bicarbonate, vitamin C, alpha-lipoic acid, iodine, selenium and hydrogen **the dose determines the effect**.In conventional allopathic medicine they say the dose makes the poison but in the Natural Allopathic Medicine protocol we are not using poisons.

In Natural Allopathic Medicine we often take doses to exceedingly high levels **without** the side effects found in pharmaceuticals that are an ever-present danger even at very low doses. This general information on dosages is very applicable to hydrogen.

In allopathic medicine everything, even water and vitamin C, are placed on a scale of toxicity with everything being defined as poisonous. And though it's true that one can drown in water, a large person can safely drink a gallon of it without ill affect and one can put pounds of magnesium chloride in a bath and take very high doses of iodine safely for infectious disorders without the serious and dangerous downside of antibiotics. Adverse effects are very rare and are usually attributed to lack of care or knowledge on the part of the person or prescriber.

It is certainly possible to cure incurable diseases through the use of the right doses of vitamins, minerals and fatty acids (among other things). **The dose determines the effect! Low doses do not get clinical results!** Through the years the mistake I have seen people making over and over is **under-dosing**.

Cardiologist Dr. Thomas Levy said, "**The three most important considerations in effective vitamin C therapy are dose, dose, and dose. If you don't take enough, you won't get the desired effects.**"

Effective doses are high doses, often hundreds of times more than the U.S. Recommended Dietary Allowance (RDA) or Daily Reference Intake (DRI). Dr. Abram Hoffer said, "Drs. Wilfrid Shute and Evan Shute recommended doses from 400 to 8,000 IU of vitamin E daily. The usual dose range was 800-1600 IU but they report that they had given 8,000 IU without seeing any toxicity." The Shutes successfully treated over 35,000 patients with vitamin E.[lxxiv]

If one is lucky enough to have a hydrogen inhaler and is in critical condition one does not have to worry about dosage. Four hours a day or longer should make a significant impact on very serious conditions.

Critical Dosages



Knowing appropriate dosages is important to practitioners and patients because dosages are mission critical for achieving therapeutic effects. Estimating dosages is something we all must do. The most basic thing we do that with is our water intake. What is the right amount of water (dosage) a person should drink in a day? What dosage of sun? These are important questions that doctors often answer incorrectly.

In pharmaceutical medicine the principle way of measuring the critical dose of a medicine would be to measure the minimum necessary for therapeutic effect. That is an important dosage because what comes with increasing dosages of synthetic chemicals (all pharmaceuticals are mitochondrial poisons) is an increase in side effects and an increased

chance a person can die from prescribed medicines.

Dr. Barbara Starfield, in her paper published in JAMA in July 2000 reported that 106,000 people in America alone die from properly prescribed pharmaceutical medicines. In 2015, 443,900 total deaths from prescription medication were reported to one of the US's poison centres, with analgesics-or pain-killers-being the deadliest poison. Of these, 275,000 were due to some error-such as a wrong dose-and 130,000 were caused by unintentional misuse, such as taking the drug more frequently than prescribed. Nearly 40,000 deaths were attributed to an adverse reaction to a drug that was properly prescribed and taken.

http://www.drug-education.info/documents/iatrogenic.pdf Clinical Toxicology, 2016; 54: 924-1109

There are more than 75,000 ER visits a year due to Tylenol overdoses causing serious health emergencies, including liver failure and death. There hasn't been a person who has died from an iodine overdose in 50 years yet there are plenty of doctors who are afraid to prescribe iodine. To add insult to injury that one iodine death was an intentional attempt at suicide. There really is no such thing as safe drugs. "Safe" Pharmaceutical Poisons Don't Exist, but there is a host of safe but powerful natural substances that Mother Nature gives us to heal ourselves.

The top five causes of poisoning in a recent study were,
in order, antidepressant medications, analgesics such
as aspirin, street drugs, cardiovascular drugs and alcohol.
Royal Society of Chemistry

That is what happens when you deal with dangerous drugs. After 400 years modern medicine is having a problem with its own paradigm, "The dose makes the poison." One of the reasons is that the art, science and absurdity of using poisons as medicine has been clouded with the fact that most city dwellers are already filled with poisons from the air and water they are exposed to. Adding more poisons to a person's already sky high toxic burden simply does not work.

The dose makes the poison is a long accepted concept, but medicine is supposed to be about helping people The word poison was first recorded in Middle English in a work composed around 1200ad. A poison is any substance which, when introduced into or absorbed by a living organism, destroys life or injures health. Poison is defined as any substance capable of producing a morbid, noxious or deadly effect. A poison is a material that inhibits other substances, especially enzymes, and the vital biochemical processes

they are involved in. Enzymes are crucial because every chemical change that takes place to repair tissue or to assimilate food involves the activity of enzymes. Without enzyme activity there is no biological activity, no life.

The effects of poisons can be quick or extremely slow - building gradually up creating low grade debilitation diseases like in chronic fatigue syndrome or devastating neurological disorders like MS, ALS, and Alzheimer's disease. Nothing will burn up a neuron faster than heavy metal mercury, which is injected into babies starting at six months of age. Vancouver neuroscientist Dr. Chris Shaw shows a link between the aluminum hydroxide used in vaccines, and symptoms associated with Parkinson's, amyotrophic lateral sclerosis (ALS, or Lou Gehrig's disease), and Alzheimer's.

Wrong Dosages Wrong Medical Concepts

It is thought that if the dose is low enough, even a highly toxic substance will cease to cause a harmful effect. The toxic potency of a chemical is thus ultimately defined by the dose (the amount) of the chemical that will produce a specific response in a specific biological system. "In all of these debates, the key point that is not often understood is that it's the dose that makes the poison," says Dr. Carl Winter, an expert in toxicology at the University of California, Davis. "The tendency is to exaggerate toxicity. It's a slippery slope where to draw the line on what represents a legitimate concern and what restrictions should apply."[lxxv] This is of course not true for something as strong as plutonium. The crucial issue with plutonium is not volume or mass-it's toxicity.

The Romans were aware that lead could cause serious health problems, even madness and death. However, they were so fond of its diverse uses that they minimized the hazards it posed. What they did not realize was that their everyday low-level exposure to the metal rendered them vulnerable to chronic lead poisoning, even while it spared them the full horrors of acute lead poisoning. Roman engineers brought down the Roman Empire when they replaced their stone aqueducts with lead pipes for the transport and supply of drinking water, turning much of the Roman population into neurological cripples.[lxxvi]

"The prolonged effects of low grade concentrations of toxic substances depend on individual susceptibility," says Professor I. M. Trakhtenberg from the former Soviet Union. The science of low-level toxicity shows that it matters what is happening on the parts per million, per billion and even per trillion level. As our instruments have become infinitely more sensitive, scientists have been able to penetrate into new worlds of chemical sensitivity that Paracelsus could not have possibly imagined. What industry and government have hidden in the low numbers seen in parts per million becomes

astronomical when calculated and plotted out as parts per trillion.

Hormesis

"What doesn't kill you makes you stronger" is a phrase that many feel contains more than a grain of truth. It describes the theory of hormesis - the process whereby organisms exposed to low levels of stress or toxins becomes more resistant to tougher challenges. It is a cousin concept for "The dose makes the poison."

In recent years biologists have pieced together a clear molecular explanation of how hormesis works; thus the theory has finally been accepted as a fundamental principle of biology and biomedicine. An example of this principle is seen when exposing mice to small doses of gamma ray radiation shortly before irradiating them with very high levels of gamma rays. This actually decreases the likelihood of cancer. A similar effect occurs when dioxin is given to rats.

It is thought that a low dose of a poison can trigger certain repair mechanisms in the body, and these mechanisms, having been initiated, are efficient enough that they not only neutralize the toxin's effect, but can even repair other defects not caused by the toxin. It's a nice theory to justify poisoning people and taking pot luck at achieving exactly the right dose. It makes much more sense to dance with magnesium and other extraordinarily safe substances that don't poison the patient.

Calculating Dosages for Natural Medicine

In natural medicines, the critical dosage is measured by the maximum that can be taken to achieve the needed therapeutic effect. In *Natural Allopathic Medicine* we often take doses to exceedingly high levels without the side effects found in pharmaceuticals that are an ever-present danger even at very low doses.

The secret to safe and effective medicine is found in using medicinal substances that do not have side effects in reasonable doses, meaning they are not poisons. This is the very meaning of safe - something that will not harm or hurt you. The key to any natural protocol is getting the doses high enough. With most substances it is best to start out low and get used to each substance and then slowly bring the doses up.

Conclusion



Auroleus Phillipus Theostratus Bombastus von Hohenheim, immortalized as "Paracelsus" and sometimes called "the father of toxicology," was born in 1493. Paracelsus, a Swiss doctor, pioneered the use of chemicals and minerals in medicine. Paracelsus was the first to say, "It depends only upon the dose whether a poison is a poison or not. A lot kills; a little cures." So he would take a very toxic substance like mercury and use it to cure epilepsy, something no one in his right mind would do now.

The assumption that poisons can be used safely is modern man's Pandora's Box; once opened the greediest power hungry industrialists felt free to use poison in everything from household products like soap and shampoo, to putting it directly into our foods, medicines and even drinking water.

[lxxiv] http://orthomolecular.org/resources/omns/v05n01.shtml

[lxxv] Christian Science Monitor. June 3, 2005 - California takes aim at chemicals in plastics
http://www.csmonitor.com/2005/0603/p02s01-uspo.html

[lxxvi] EPA Journal - May 1985. Lewis, Jack.

Hydrogen Water



· Drinking water that contains high-levels of hydrogen is an effective way to take hydrogen into the body. Also, the hydrogen present in the water is proven to increase hydration levels, proven to satiate your thirst six times more than tap water.

· Hydrogen water can improve the absorption of supplements taken inside the body. It can also absorb nutrients from food much better than regular tap water.

· It can help lubricate body joints and muscles. Hydrogen rich water provides around 70% lubrication to joints and muscles.

· Hydrogen water can help the brain perform better. Our brain cannot use its full potential without proper hydration.

· It can help remove impurities inside your body. It can also improve the quality of your cells and organs.

· Drinking hydrogen water can help regulate your blood pressure to maintain optimum performance.

· It reduces the symptoms of some chronic illness known to attack the body. It can also help prevent the onset of symptoms of arthritis and reduce headaches.

· It hydrates the skin. Dehydration can make skin flaky and sag in time. Proper hydration is needed to maintain skin quality.

· It reduces damage taken from the sun and wind. It also helps hydrate hair follicles.

Drinking dissolved hydrogen

The concentration/solubility of hydrogen in water at standard ambient temperature and pressure (SATP) is 0.8 mM or 1.6 ppm (1.6 mg/L). For reference, conventional water (e.g. tap, filtered, bottled, etc.) contains less than 0.0000002 ppm of H_2, which is well below the therapeutic level. The concentration of 1.6 ppm is easily achieved by many methods, such as simply bubbling hydrogen gas into water. Because of molecular hydrogen's low molar mass (i.e. 2.02 g/mol H_2 vs. 176.12 g/mol vitamin C), there are more hydrogen molecules in a 1.6-mg dose of H_2 than there are vitamin C molecules in a 100-mg dose of pure vitamin C (i.e. 1.6 mg H_2 has 0.8 millimoles of H_2 vs. 100 mg vitamin C has 0.57 millimoles of vitamin C).

The half-life of hydrogen-rich water is shorter than other gaseous drinks (e.g. carbonated or oxygenated water), but therapeutic levels can remain for a sufficiently long enough time for easy consumption. Ingestion of hydrogen-rich water results in a peak rise in plasma and breath concentration in 5-15 min in a dose-dependent manner

The rise in breath hydrogen is an indication that hydrogen diffuses through the submucosa and enters systemic circulation where it is expelled out the lungs. This increase in blood and breath concentration returns to baseline in 45-90 min depending on the ingested dosage.

Water is oxygen and hydrogen. Water is a wonderful medicine so necessary to life. We know that drinking water helps protect individuals from chronic kidney disease (CKD). At the Canadian Society of Nephrology's 2013 annual meeting, researchers reported on an analysis of data from the 2005-2006 National Health and Nutrition Examination Survey (NHANES); improved neurological deficits improved neurological deficits improved neurological deficits data showing that CKD was 2.5 times less likely to develop in people who drank more than 4.3 liters of water a day than those who drank less than two liters a day.

"Water, the Hub of Life. Water is its mater and matrix, mother and medium. Water is the most extraordinary substance! Practically all its properties are anomalous, which enabled life to use it as building material for its machinery. Life is water dancing to the tune of solids," wrote Albert Szent-Gyorgyi. It is hydrogen and oxygen that are doing the dancing.

Dr. Gerald Pollack, professor of bioengineering, received the highest honor that the University of Washington at Seattle in the United States could confer on its own staff for his work with water. Professor Pollack, says, "Water covers much of the earth. It pervades the skies. It fills your cells - to a greater extent than you might be aware. Your cells are two-thirds water by volume; however, the water molecule is so small that if you

were to count every single molecule in your body, **99% of them would be water molecules**. That many water molecules are needed to make up the two-thirds volume. Your feet tote around a huge sack of mostly water molecules."

Hydrogen researcher Walter Wiseman reminds us of basic chemistry saying, "By weight, our bodies are mostly oxygen because oxygen is eight times heavier than hydrogen. **By volume our bodies are mostly hydrogen** because there are two hydrogen atoms for every oxygen atom." Hopefully the message is getting clear. When we employ hydrogen and oxygen, in the diverse forms available to us, we are practicing a supreme life extending health practice that doubles as medicine.

We all know that dehydration is a problem that causes suffering and disease. Dehydration is obviously a deficiency of molecules of hydrogen bonded to oxygen. Oxygen deficiency is a problem and so is an excess of charged hydrogen atoms, which drives the blood and body into acidity.







For about two years I have been experimenting with different molecular hydrogen products and have recently been using a new generation of tablets that are the best, most convenient highest ppm. There are several labels that sport variations of these different advanced tablets.

The most distinguished players in this market have been *Vital Reaction*, which also has one of the most powerful hydrogen inhalers, and *Active H2*. *Active H2*, one of the original players, has also come out with a popular new hydrogen tablet The first player in the hydrogen tablets was actually *Megahydrate*, which works differently than molecular hydrogen. There is controversy over Megahydrate, which we will present in this book. Some people like taking Vital Reaction, or a similar type hydrogen tablet, with the Megahydrate, which one can intake via capsules as long as one drinks enough water to make the reaction happen in the stomach.

The Vital Reaction and the Trusii have the highest ppm at 10 or above and the highest amount of magnesium, which registers 80 mg per tablet. For a slightly lower price Active H2 Ultra offers around 8 ppm, and there is no residue in the glass, making for pleasant hydrogen consumption.

None of the hydrogen water machines on the market can create hydrogen at the high levels that the newest generation of tablets can, which are exceptional in terms of hydrogen concentration. They provide far more hydrogen in the shortest amount of time. Moreover, they make their hydrogen in an open container for convenience and effortlessness of use.

https://www.youtube.com/watch?v=h8JIY05SXRY

Hydrogen tablets are great for all first time users. Even if one purchases a dedicated hydrogen gas inhaler that makes hydrogenated water at the same time, the tablets offer portability and more potency. When one's medical needs are critical one wants to jump on as high a dose as possible of hydrogen.

"I've been using Vital Reaction tablets daily for the past 4 months and have been noticing multiple positive changes in my health. While I am generally in excellent health and take no prescription medications, I have been battling brain fog for the past several years. This was negatively impacting my work, my academic efforts, and my personal life as I could not recall information quickly when needed. Since starting to drink hydrogen water, I have been able to think more clearly and my memory recall has definitely sharpened. I have also noticed that my energy level has been increased since using the tablets. I no longer get tired during the day and have also been sleeping more soundly and not waking during the night. Finally, previous pain in my muscles has seemed to dissipate to the point I don't have any more body pain. I love my hydrogen water and am committed to continuing it as a part of my daily routine!" Dr. Leslie Nye

Hydrogen Water Machines



The H2Pro offers the highest concentration professional grade molecular hydrogen water system. These high concentrations give you access to therapeutic antioxidant-rich water in an easy-to-use counter top cooler for the entire family, office, or wherever you choose. You pay for what you get with this system. There are less expensive systems, and it is fine to use low ppm hydrogen water as long as one is doing the inhalation therapy.

Proprietary molecular hydrogen generation process

High Molecular Hydrogen content (4 ppm - 5 ppm)

5,720 - 6,720 dollars



The H2Elite X System offers the highest ppm of all the water machines, clocking in at over eight parts per million. For $9770.00 it better deliver, and it does. Both of the Trusii are heavy duty hydrogen water machines that one can put in heavily trafficked offices and clinics. Giving one's employees the best water for their health is a good business practice and It will save money in medical expenses in the long run.

Interestingly the company offers complete financing for this high end machine, and there is a note on the website: ATTENTION: Due to high demand, this system is ONLY available to people seeking help with specific health conditions / performance goals who enroll in our paid in-home case study. It will be available to everybody in the future. To see if you qualify for a system/study or to put yourself on the waiting list, click below to apply today! Space is limited. See if you qualify for our in-home paid case study.

The CDC Never Learned Hydrogen Medicine for the Flu



The CDC (Centers for Disease Control) never learns because they do not want to learn. And In the middle of flu season people pay with their lives. **Every year hundreds of people needlessly die during Flu season.**

The CDC has called the 2017-2018 flu an epidemic. In England it was a pandemic filling up hospitals with standing room only. They reported that more than 50 patients at a time had been left waiting for beds in casualty units, with 120 patients a day being managed in corridors and "some dying prematurely."

On the 12th of January that year, the CDC announced a first in its 13 years of flu monitoring: As of Jan. 6, every part of the continental U.S. showed "widespread" flu activity. The flu was so widespread, in fact, that the agency has declared it an epidemic, and urged those who have not been vaccinated to seek out the flu shot. This is a bad idea, not only because it has neurotoxic mercury but also because at best it is only 30 percent effective, according to CDC officials.

"This is the first year we had the entire continental U.S. be the same color on the graph, meaning there's widespread activity in all of the continental U.S. at this point," CDC Influenza Division Director Dr. Dan Jernigan said during a Friday briefing. "It is in a lot of places and causing a lot of flu." At that time the hospitalization rate was 22.7 people per 100,000 U.S. residents.

The Flu, while causing mild disease in a lot of people, can also cause severe disease and death in others. The flu may also exacerbate existing chronic conditions, particularly among older adults, which can lead to complications and death.



If you see a doctor within 48 hours of developing these symptoms, you may be able to take antiviral medications, such as Tamiflu, which may shorten the course of the illness by only one day. Tamiflu is and has always been a big mistake!

> As soon as flu vaccinations start next month, some people getting them will drop dead of heart attacks or strokes, some children will have seizures and some pregnant women will miscarry. - New York Times 2009.

You would think the public media and the CDC would insist that people know that:

> Living with cancer increases your risk for complications from influenza ("flu"). If you have cancer now or have had cancer in the past, you are at higher risk for complications from the seasonal flu or influenza, including hospitalization and death. This is especially true if you are having surgery, chemotherapy or radiation. (The government could not even maintain the link to this information.)

"People tend to underestimate the effects of flu (and doctors underestimate the dangers of vaccines), but it puts several hundred thousand people in the hospital every year. It

can kill up to 50,000 people every year, and there are certain groups-people with underlying medical conditions, the elderly and the very young-who are at risk for severe illness from flu," said Dr. Michael Jhung, a flu expert at the U.S. Centers for Disease Control and Prevention.

Replacing the Need for Flu Vaccine and Tamiflu

An important part of this essay is about *Hydrogen Medicine;* about how hydrogen gas, especially, when administered with oxygen, will save the day in medical centers, and at home too when one has severe flu. It is hard to die of the flu if you are hooked up to a hydrogen inhaler. This is just the tip of the iceberg in terms of what Hydrogen Medicine will do for the future of medical practice.

Page two of this essay concentrates on the protocol standing behind hydrogen: substances already used in intensive care centers like sodium bicarbonate, magnesium chloride or sulfate, iodine, oxygen, carbon dioxide (an excellent and essential medicine because it moderates oxygen); and let's not forget injectable selenium. You must also add to the list glutathione, infrared therapy and the best water one can make. Add medical marijuana to reduce suffering from symptoms and we have a full medical protocol, no pharmaceuticals needed.

Death Via Cytokine Storms

We need to understand why hydrogen is the contest winner for **best flu medicine**. The primary symptoms of a cytokine storm (what kills the patient with influenza) are high fever, swelling and redness, extreme fatigue and nausea. In some cases, the immune reaction may be fatal. To stop the cytokine storms and acute respiratory distress syndrome (ARDS), we have to turn away from the orthodox medical responses of using vaccines and drugs like Tamiflu.

Data from clinical trials involving patients with sepsis-induced ARDS have shown a reduction in organ damage and a trend toward improvement in survival (survival in ARDS is approximately 60%) after administering a variety of free radical scavengers (antioxidants).

Hydrogen to the Rescue

Recent studies revealed that intraperitoneal injection of hydrogen-rich saline has surprising anti-inflammatory, anti-oxidant, and anti-apoptosis effects. It also **protected the organism against polymicrobial sepsis injury**, acute peritonitis

injury both by reducing oxidative stress and via **decreasing mass pro-inflammatory responses**. It is well known that most viral induced tissue damage and discomfort are mainly caused by an inflammatory cytokine storm and oxidative stress rather than by the virus itself.[lxxvii]

Studies have shown that suppressing the cytokine storm and reducing oxidative stress can significantly alleviate the symptoms of influenza and other severe viral infectious diseases. Medical scientists thus hypothesize a hydrogen-rich solution therapy to be a safe, reliable, and effective treatment for Multiple Organ Dysfunction Syndrome (MODS) induced by influenza and other viral infectious diseases.

Combination Therapy for the Flu

Of course, there are other excellent therapies to avoid the worst symptoms and pains of the flu with infrared therapy being at the top of the list. Jumping on a Biomat when suffering from the flu is like jumping into heaven. The only place to be during a flu attack; crashed out on a Biomat! In terms of hydrogen delivery, the best approach is to administer hydrogen and oxygen gases with an inhaler combined with hydrogen water for full hydration.

[lxxvii] SOJ | Microbiology & Infectious Diseases. Hydrogen Medicine Therapy: An Effective and Promising Novel Treatment for Multiple Organ Dysfunction Syndrome (MODS) Induced by Influenza and Other Viral Infections Diseases? https://symbiosisonlinepublishing.com/microbiology-infectiousdiseases/microbiology-infectiousdiseases70.php

Natural Allopathic Emergency Medicine for Flu



Five years ago, I published an intelligent protocol against influenza that involves the use of basic emergency room and intensive care medicines that are an integral part of Natural Allopathic Medicine. But also includes Magnesium chloride, iodine, sodium bicarbonate, selenium, vitamin C and vitamin D3 (if possible through sun exposure) as medicines that help patients resist and even avoid dangerous complications from the flu.

Breathing retraining (slow breathing) aids in increasing CO_2 and O_2 levels, and of course the application of full hydration therapy is essential. Hydrogen is the perfect medicine to mitigate the worst effects of the flu. Molecular hydrogen can significantly down-regulate expressions of inflammation related genes and also selectively reduce hydroxyl radical and Peroxynitrite.

Infrared Therapy - Too Good to be True for the Flu

If it is possible to love a medical device one will fall for the infrared Biomat. It keeps you warm on cold nights and takes away pain. This is especially true if one is suffering from the flu. Everyone deserves a Biomat just as everyone deserves love. I call them medical love machines. Biomats are that good and that helpful. I wish everyone could afford one!

When FIR heat penetrates through the skin to the subcutaneous tissues, it transforms from light to heat energy, dilating blood capillaries and assisting the body in eliminating

toxins and metabolic wastes through sweating. Activated by heat, the FIR energy is absorbed by human cells in a process known as "resonance" or "resonant absorption."

The adaptive capacity of a cell ultimately determines its fate when it comes under stress. Far infrared treatments reduce the stress on the cells by not only nourishing them with light and heat but also by increasing nutritional sufficiency of oxygen and by increasing cellular respiration so more toxins and wastes leave the cells.

This is the device that is best for elevating internal body temperature to melt away old waste products, increase circulation and reduce and eliminate pain. It is only a couple of inches thick, designed to put on top of a firm mattress or on the floor. You can adjust the temperature to your liking and it's the most wonderful feeling in the world.

It is different from an ordinary electric heating pad. The surface is not warm to the touch, but when you lie down on it you feel warm on the inside. It's a lying down sauna, and if you turn the settings up it will make you sweat without you having to move a muscle. You can sleep on it all night!

Far infrared heat is beneficial to people in many ways:

1. FIR heat expands capillaries, stimulating increased blood flow, and aiding in regeneration, improved circulation and oxygenation.

2. Far infrared heat speeds cellular metabolic rates by stimulating the activity of mitochondria, and triggering enzyme activity; therefore promoting the destruction of many pathogens: bacteria, viruses, fungi and parasites. FIR energy strengthens the immune system by stimulating increased production of white blood cells (leukocytes) by the bone marrow and killer T-cells by the thymus gland.

3. Far infrared heat promotes the rebuilding of injured tissue by having a positive effect on the fibroblasts (connective tissue cells necessary for repair). It increases the growth of cells, DNA and protein synthesis necessary during tissue repair and regeneration.

Sodium Bicarbonate (Baking Soda)

"In 1918 and 1919 while fighting the 'Flu' with the U. S. Public Health Service it was brought to my attention that rarely anyone who had been thoroughly alkalinized with bicarbonate of soda contracted the disease, and those who did contract it, if alkalinized early, would invariably have mild attacks. I have since that time treated all cases of

'cold,' influenza and 'la gripe' by first giving generous doses of bicarbonate of soda, and in many, many instances within 36 hours the symptoms would have entirely abated." (Dr. Volney S. Cheney to the Arm & Hammer Company.)

Vitamin D Will Protect Against the Flu

One of the greatest triggers of influenza, the swine flu and deaths from pulmonary deficiency is vitamin D deficiency. Vitamin D reduces the risk of dying from all causes including the flu. Researchers from Winthrop University Hospital in Mineola, New York found that giving supplements of vitamin D to a group of volunteers reduced episodes of infection with colds and flu by 70% over three years. The researchers said that the vitamin stimulated "innate immunity" to viruses and bacteria.

Iodine

"Extremely high doses of iodine can have serious side effects, but only a small fraction of such extreme doses are necessary to kill influenza viruses," writes Dr. David Derry of Canada.[2] In 1945, a breakthrough occurred when J. D. Stone and Sir McFarland Burnet (who later went on to win a Nobel Prize for his Clonal Selection Theory) exposed mice to lethal effects of influenza viral mists. The lethal disease was prevented by putting iodine solution on mice snouts just prior to placing them in chambers containing influenza viruses. Dr. Derry reminds us that a long time ago students in classrooms were protected from influenza by iodine aerosol therapy. Aerosol iodine also is effective against freshly sprayed influenza virus.

Selenium

Selenium is a strong antioxidant anti-inflammatory. Vascular surgery is made safer; reperfusion injury, myocardial infarction, and ischemic stroke are all alleviated with selenium injections; as are cytokine storms provoked from out of control infections.

Clinical investigations in sepsis studies indicate that higher doses of selenium are well tolerated. Continuous infusions of selenium as sodium selenite (4,000 µg selenium as sodium selenite pentahydrate on the first day, 1,000 µg selenium/day on the nine following days) had no reported toxicity issues. In view of this information, Biosyn introduced the 1,000 µg dose vials for such high selenium clinical use.

Selenium-deficient mice developed much more severe lung pathology after infection with influenza virus than did selenium-adequate mice. In another study, when selenium-deficient mice were infected with a mild strain of influenza virus, the virus mutated to

become a more virulent strain, one that caused severe lung pathology even in selenium-adequate mice.

Selenium is also an antidote to mercury having a higher affinity for it than any other atom. So selenium does double duty, lowering mercury toxicity. This is important because mercury toxicity is known to provoke influenza.

Magnesium Chloride

Magnesium chloride (magnesium oil) has always been and remains my favorite medicine that affects overall physiology in a very positive and direct way. Dr. Raul Vergini says, "Magnesium chloride has a unique healing power on acute viral and bacterial diseases. It cured polio and diphtheria and that was the main subject of my magnesium book. A few grams of magnesium chloride every few hours will clear nearly all acute illnesses, which can be beaten in a few hours. I have seen a lot of flu cases healed in 24-48 hours with 3 grams of magnesium chloride taken every 6-8 hours."

Vitamin C

Intravenous vitamin C is a wonderful treatment when people are between life and death It has the power to bring people back from the brink. Vitamin C (ascorbic acid) contributes a wide range of benefits. It is known to perform many critical functions within the body involving detoxification, tissue building, immune enhancement, pain control, and controlling or killing of pathogenic organisms. It is also known to be helpful for wound and bone healing, healthy skin and eyes, fighting infections, stress control, toxic exposure, and repairing damaged tissue of all types.

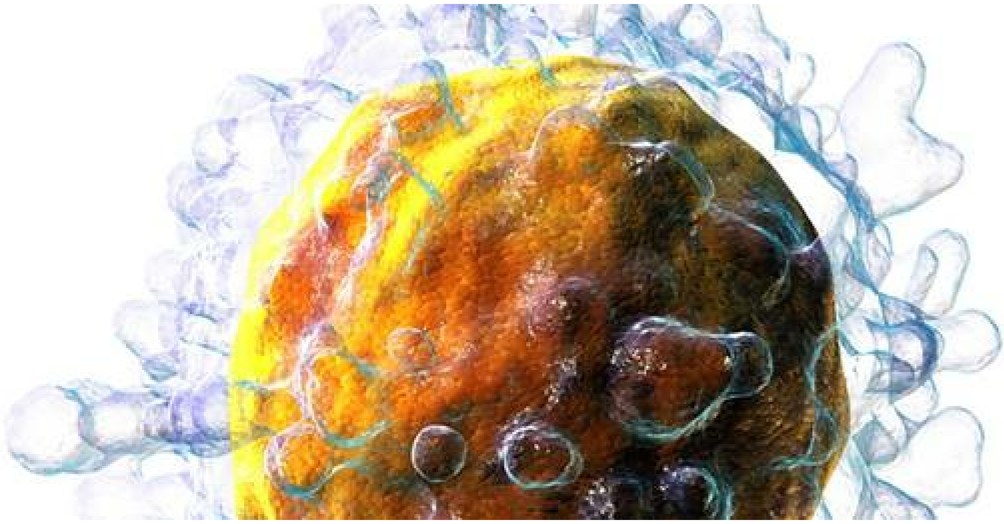
Cannabinoid Medicine

Dr. Ben Whalley, at the department of pharmacy of the University of Reading, said tests in animals had shown marijuana compounds to be effective at preventing seizures and convulsions while also having fewer side effects than existing epilepsy drugs. At the National Institutes of Health (NIH) in Bethesda, Md., rat nerve cells were exposed to a toxin that is typically released during strokes. Cannabidiol reduces the extent of damage, reported the National Academy of Sciences. More effective than vitamins C or E, strong antioxidants such as cannabidiol (CBD) will neutralize free radicals without the accompanying high experienced with marijuana used for recreational and other medical purposes. All forms of cannabis have anti-oxidative, neuroprotective, immunomodulation, analgesic and anti-inflammatory actions.

Beyond these core physiological protective mechanisms, something as simple as smoking marijuana is ideal for the pain and discomfort of influenza. With or without the "high," cannabinoid medicine offers safe pain relief even as it heals and protects. It should be put into wide use in hospitals, as well as in the home, for routine treatment against the worst ravages of the flu.

What I am saying for adults above also applies to children. Dr. Ester Fride strongly recommends the use of cannabinoids in pediatric medicine. She notes that "excellent clinical results" have been reported in pediatric oncology and in case studies of children with severe neurological diseases or brain trauma. She suggests that cannabis-derived medicines could also play a role in the treatment of other childhood syndromes, including the pain and gastrointestinal inflammation associated with cystic fibrosis.

Strengthening the Immune System



A white blood cell, also known as a T cell, carries special structures on its surface with which to recognize specific pathogens. (Grapics: Blausen.com)

"On the whole, your immune system does a remarkable job of defending you against disease-causing microorganisms. But sometimes it fails: A germ invades successfully and makes you sick. Is it possible to intervene in this process and make your immune system stronger? What if you improve your diet? Take certain vitamins or herbal preparations? Make other lifestyle changes in the hope of producing a near-perfect immune response? The idea of boosting your immunity is enticing, but the ability to do so has proved elusive for several reasons. The immune system is precisely that - a system, not a single entity. To function well, it requires balance and harmony. There is still much that researchers don't know about the intricacies and interconnectedness of the immune response. For now, there are no scientifically proven direct links between lifestyle and enhanced immune function," - Harvard Health.

The type of immune therapy the pharmaceutical companies and oncologists support costs upwards of a million dollars a year. Nivolumab costs $28.78 per mg of drug, whereas Ipilimumab costs $157.46 per mg. "To put that into perspective, that's approximately 4000 times the cost of gold," commented Leonard Saltz, MD, from Memorial Sloan Kettering Cancer Center, New York City. For a million dollars one run's the risk of not only ending up bankrupt after the treatment but also dead:

> A sign of how potent the T-cell treatments are is that most patients suffer from "cytokine release syndrome," a storm of molecules generated as the cells fight

the cancer. At least seven patients have been killed by the syndrome.

Natural Allopathic Medicine offers a safer and infinitely less costly method of stimulating the immune system. Though the entire protocol is more than helpful, (iodine, selenium and magnesium; the sodium bicarbonate because the immune system as well as every organ and system in the body, is pH sensitive), it is hydrogen and infrared therapy we put at the top of the protocol list for getting the immune system into top working order.

Hydrogen Immune System Medicine

Oxidative stress damages the immune system, thus hydrogen is the perfect medicine to revive immune system strength. Under significant oxidative stress, the immune system does not work properly because of damage to the T cells. Instead, the T cells divide off and die, which allows the infection to become chronic. The immune system is limited by oxidative stress, and since we know that minerals, like selenium, promote optimal anti-oxidative status and the greatest immune defense, we can easily assume that this process would be augmented by molecular hydrogen as well as a combination of other antioxidants.

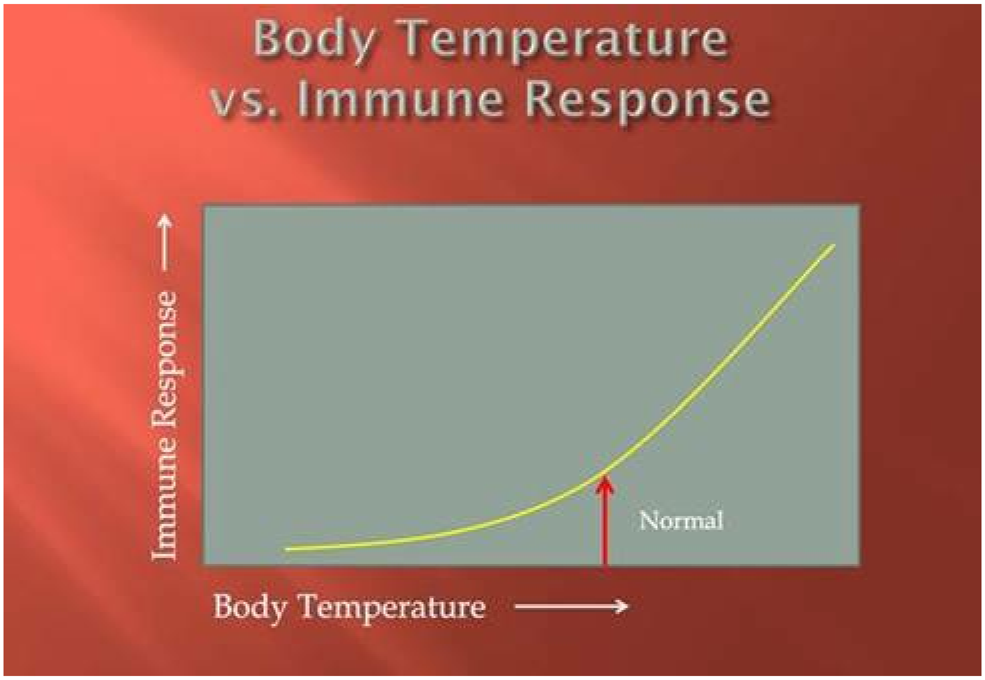
A research team working with Manfred Kopf, professor at ETH Zurich's Institute of Molecular Health Sciences, set out to determine the **effects of oxidative stress on immune cells**. They found that when a virus invades the body, T cells move into action and proliferate rapidly. A sub-class of these cells, CD8+T cells, eliminate the virus by killing the cells that were infected. CD4+T cells coordinate the immune response to different pathogens. It can take up to a week for the T cells to completely divide and conquer.



Dr. Manfred Kopf and his team have now shown that higher doses of antioxidants like vitamin E can reduce the stress on immune cells. Hydrogen, as the ultimate antioxidant would provide safe fast relief to the immune system's cells. This is one of the reasons hydrogen will find its place in intensive care wards as well as ambulances.

These researchers were able to save the immune cells by mixing a high dose of vitamin E into the animals' food. That was enough antioxidant to protect the T cells' cell membranes from damage, so they could multiply and successfully fend off a viral infection. "We are the first to demonstrate that oxidative stress causes immune cells to suffer the same type of death as cancer cells," Dr. Kopf says.

Raising Core Body Temperature



Another effective and actually vital way of increasing immune system response, is to increase body temperature with infrared therapy. 98.6° F is the natural operating temperature for most people. Immune system function, vitality and metabolism decrease with temperature loss up to about 50-70% depending how low one's basal body temperature drops.

The lack of warmth often appears with cold hands and feet, but also with chronic cold illnesses: Depressions, burnout, tiredness, arthrosis, impotence, Parkinson's, MS and dementia as well as many other diseases. Cancer tumors grow faster when the body temperature is low. Low body temperature invites cancer because of the lowered ability

of the immune system to clear the body of cancer cells.

The National Cancer Institute says, "Hyperthermia (also called thermal therapy or thermotherapy) is a type of cancer treatment in which body tissue is exposed to high temperatures. Research has shown that **high temperatures can damage and kill cancer cells**, usually with minimal injury to normal tissues. Many studies have shown a significant reduction in tumor size when hyperthermia is combined with other treatments."

The American Cancer Society says, "Hyperthermia refers to heat treatment-the carefully controlled use of heat for medical purposes. When cells in the body are exposed to higher-than-normal temperatures, changes take place inside the cells. These changes can make the cells more likely to be affected by radiation therapy or chemotherapy. **Very high temperatures can kill cancer cells outright**."

Cancer Radiation Treatments

Standing in Front of a Nuclear Firing Squad



Radiotherapy can leave patients with a lifetime of suffering and their life expectancy severely shortened. The New York Times said, "These interventions can be just as brutal on the patient as they are on a tumor." Thousands of cancer survivors have developed terrible conditions as a result of the radiotherapy treatment that helped save them.

Radiation treatments may save some lives in the short term, but often at a terrible cost in terms of future suffering. The American Cancer Society acknowledges that chemotherapy and radiotherapy are carcinogens and may increase risk for developing a second cancer, and that the risk is even higher when both therapies are given together. Secondary cancers tend to be lethal. Death by radiation exposure is slow motion death, unless one does something about it.

Exposure to radiation causes a cascade of free radicals that wreak havoc on the body. Radiation also decimates the body's supply of glutathione, which allows free radicals to run rampant through our body's tissues and organs.

Though there might be some kind of hormesis effect with an uptick of glutathione body defenses, it is important to know that glutathione levels cannot be sustained without the precursors-namely selenium, magnesium and sulphur.

Dr. Walter Russel said a century ago in his book *Atomic Suicide* that nuclear radiation is the death principle. It not healthy to expose yourself to cancer activating diagnostic and treatment radiation procedures..

Dr. Edward Golembe, who directs a hyperbaric oxygen chamber at Brookdale University Hospital in Brooklyn, said he had treated serious radiation injuries to the jaw and called them "a horrible, horrible thing to see." When we deal with radiation we deal with death for it is the death principle that doctors are trying to harness with terrible results. Most people who employ radiation in their treatments for cancer suffer horribly though it might save their life in the short term.

Radiation therapy has been linked to the occurrence of solid tumors of the lung, stomach, and bone, and to various types of leukemia such as AML (acute myelogenous leukemia), CML (chronic myelogenous leukemia), and ALL (acute lymphoblastic leukemia).

Radiation hazards have been grossly underestimated because they have to be. If they were not, then both the medical industry and the atomic power industry would be vulnerable to staggering liabilities. "Radiotherapy damage has not been a priority in the treatment of cancer," says Dr. Paul Cornes, who runs clinics for patients with radiotherapy damage.

Nuclear Bullets

When just one of these nuclear particles or rays goes crashing through some material, it collides violently with atoms or molecules along the way. . . . In the delicately balanced economy of the cell, this sudden disruption can be disastrous. The individual cell may die; it may recover. However, if it does recover, after the passage of weeks, months or years, it may begin to proliferate wildly in the uncontrolled growth.

Radiation consists of several types of subatomic particles, principally those called gamma rays, neutrons, electrons, and alpha particles, that shoot through space at very high speeds, something like 100,000 miles per second. They can easily penetrate deep inside the human body, damaging some of the biological cells of which the body is composed. This damage can cause a fatal cancer to develop, or if it occurs in reproductive cells, it can cause genetic defects in later generations of offspring.

The American Cancer Society concedes, "Radiation can damage normal cells, and sometimes this damage can have long-term effects. For instance, radiation to the chest area may damage the lungs or heart. In some people, this might affect a person's ability to do things. Radiation to the abdomen (belly) or pelvis can lead to bladder, bowel,

fertility, or sexual problems in some people. Radiation in certain areas can also lead to fluid build-up and swelling in parts of the body, a problem called lymphedema. A long-term problem linked to radiation treatment is the possible increased risk of getting a second cancer many years later. This is caused by the radiation damage to healthy tissues. The risk of this happening is real."

Can Kill or Destroy Your Life

An unacknowledged danger of radiation therapy to the head is increased risk of stroke.[lxxviii] A study of head and neck cancer patients who received radiation therapy found that stroke rates were five times greater than expected.[lxxix] This elevated stroke risk was found many years after administration of radiation. The average time between radiation treatment and stroke was 10.9 years, but the increased risk of stroke persisted for 15 years after radiation therapy.

Late side effects occur months to years after finishing radiation. They can include: lymphedema of the arm; weakening of bone; fibrosis of the lung; accelerated atherosclerosis of the heart; and, secondary malignancies. Radiation can also affect salivary function, thyroid function and gonadal function long term.

Pelvis. Radiation therapy aimed at the pelvis may cause these side effects:

· Diarrhea

· Rectal bleeding

· Incontinence

· Bladder irritation

In addition, radiation therapy to the pelvis can cause different symptoms for men and women.

For men:

· Sexual problems, such as erectile dysfunction, which is the inability to get or maintain an erection

· Lowered sperm counts and reduced sperm activity from radiation therapy to the testes or prostate. This may affect the ability to father a child.

For women:

· Changes in menstruation, such as stopping menstruating

· Symptoms of menopause, such as vaginal itching, burning, and dryness

· Infertility, which is the inability to conceive a child or maintain a pregnancy, if both ovaries receive radiation.

How it Happens

Radiation therapy seems to create cancer stem cells and that means instead of *treating* cancer it is *causing* cancer. Fox News (news) has published an article about the undesirable effect of creating cancer stem cells-cells that researchers say are particularly adept at generating new tumors and are especially resistant to treatment. The medical media is saying that this might help explain why late-stage cancers are often resistant to both radiation therapy and chemotherapy.

We know that cancer stem cells give rise to new tumors. These stem cells are ultimately responsible for the recurrence of cancer or the dangerous spreading of it throughout the body. Scientists also have found that cancer stem cells are more likely than other cancer cells to survive chemotherapies and radiation therapies, probably because their "stemness" allows them to self-replenish by repairing their damaged DNA and removing toxins.

"Radiotherapy has been a standard treatment for cancer for so long, so we were quite surprised that it could induce stemness," said study researcher Dr. Chiang Li of Harvard Medical School in Boston. An amazing statement considering these doctors have all along been playing around with super-toxic chemotherapy poisons and radioactive death-inducing rays. Now they are surprised that this is the mechanism of death?

Low and High Exposures

If children are exposed to X-rays while still in the mother's womb (in utero), their risk of all cancers increases by 40 percent, of tumors of the nervous system by 50 percent, and of leukemia by 70 percent. Today there are thousands of people with damaged thyroid glands, many of them with cancer, who were radiated with X-rays on the head, neck, shoulder or upper chest 20-30 years ago. Ten X-ray exposures at the dentist's office are sufficient to produce cancer of the thyroid. Multiple X-rays have been linked with multiple myeloma - a form of bone marrow cancer.

A chest x-ray results in a dose equivalent of about 10 millirem (one of many units to

measure radiation); a mammogram about 200-300 millirem; an abdominal examination about 400 millirem; and a CT examination (computed tomography, also called "CAT scan"), between 2,000 and 10,000 millirem.

When radiation therapy is used to treat cancer, a very large dose of radiation, about 5,000,000 millirem (or 5,000 rem) (50,000 mSv) is delivered to the tumor site. Below is a chart that says that each dose of radiation treatment delivers 2,000,000 millirem so with the multiple treatments most patients receive it is easy to see how fast they get up to a fatal dose. **Ten thousand mSv is a fatal dose.** That is 10,000,000 millirem.

Perhaps the best way to understand this is to compare it with natural radiation - the 15,000 particles from natural sources that strike us each second throughout life. One millirem of exposure corresponds to being struck by approximately 7 billion particles of radiation. Do the math if you have a calculator that goes up that high. That is five to ten million mrem multiplied by 7 billion particles slamming into patients during their radiation treatments.

We are constantly bombarded from above by cosmic rays showering down on us from outer space, hitting us with 30 mrem per year. Combined with other natural source we are all exposed a total average dose of about 85 mrem per year from natural sources, or 1 mrem every 4 days.

Conclusion

Hydrogen would be indicated for such exposure and that is why it is suggested to drink plenty of highly concentrated hydrogen water when one travels at high altitudes in jet planes. NASA will want to completely investigate hydrogen to protect space travelers on long journeys. Medical marijuana is also known to be a good agent against radiation poisoning.

[lxxviii]Abayomi OK. Neck irradiation, carotid injury and its consequences. Oral Oncol. 2004 Oct;40(9):872-8.

[lxxix] Dorresteijn LD, Kappelle AC, Boogerd W, et al. Increased risk of ischemic stroke after radiotherapy on the neck in patients younger than 60 years. J Clin Oncol. 2002 Jan 1;20(1):282-8.

More on Radiation Exposure



Radiation is a dark dangerous subject. Since we know that hydrogen reduces the oxidative stress caused by radiation exposure (and everything else) it behoves us to fully understand the threat. Radiation, even at extremely low levels, is a health hazard that medicine is not dealing with because it uses dangerous levels of radiation in both its diagnosis and treatment of disease.

Radiation hazards have been grossly underestimated because they have to be. If they were not then both the medical industry and the atomic power industry would be vulnerable to staggering liabilities.

Radiation is an invisible terror that works insidiously in the background so it is easy to hide its part in the deterioration of the publics' health. Slowly and steadily radiation hazards are destroying not only our health but that of our children and our children's children, and many more generations to come.

To physicists all radiation is dangerous and life threatening. But according to modern medicine and the United States government there is nothing to worry about. The medical establishment throws caution to the wind, and subjects people to higher and higher levels of radiation with their obsession with medical testing.

The late Dr. John W. Gofman, former Professor Emeritus of Molecular and Cell Biology at the University of California, Berkeley, estimated that about three-quarters of all

breast cancer cases in the United States are induced by radiation - including medical X-rays, and including mammograms to detect breast cancer.

X-rays cause cancer. This is accepted, it's not controversial. Those painless, invisible rays that doctors aim at your chest or a broken bone or an arthritic joint are dangerous. That doctor or dentist is pointing a death ray right at you or your child and they have their reasons and habits that justify the whole experience.

X-rays are capable of causing virtually every known kind of mutation - - from the very common types to the very complex types, from deletions of single nucleotides, to chromosomal deletions of every size and position, and chromosomal rearrangements of every type. When such mutations are not cell-lethal, they endure and accumulate with each additional exposure to x-rays or other ionizing radiation.

"Medical radiation, received even at very low doses, is an important cause of death from Ischemic Heart Disease; the probable mechanism is radiation-induction of mutations in the coronary arteries, resulting in dysfunctional clones (mini-tumors) of smooth muscle cells," says Dr. John W. Gofman. His findings indicate that over 50% of the death-rate from Cancer today, and over 60% of the death-rate from Ischemic Heart Disease today are x-ray-induced.

Radiation exposure can occur as a single large exposure (acute), or a series of small exposures spread over time (chronic). Radiation sickness is generally associated with acute exposure and has a characteristic set of symptoms that appear in an orderly fashion. Chronic exposure is usually associated with delayed medical problems such as cancer and premature aging, which may develop over a long period of time.

As early as 1955 Dr. Alice Stewart, head of the Department of Preventive Medicine at Oxford University, became aware of a sharp rise in leukemia among young children in England. By May 1957, after the analysis of 1299 cases, half of which involved leukemia and the rest mainly brain and kidney tumors, the data showed that babies born of mothers who had a series of X-rays of the pelvic region during pregnancy were nearly twice as likely to develop leukemia or another form of cancer, as those born of mothers who had not been X-rayed. Dr. Stewart concluded that the dose from diagnostic X-rays could produce a clearly detectable increase in childhood cancer when given during pregnancy.

According to the Times, "Americans today receive far more medical radiation than ever before. The average lifetime dose of diagnostic radiation has **increased sevenfold** since 1980, and more than half of all cancer patients receive radiation therapy."

CT scans of the abdomen can deliver the radiation equivalent of 400 chest X-rays. An estimated 70 million CT scans are performed in the United States every year, up from three million in the early 1980s. Soaring numbers of kids are getting CT scans in emergency rooms. The number of ER visits nationwide in which children were given CT scans surged from about 330,000 in 1995 to 1.65 million in 2008-a five-fold increase.

Those who receive radiation harm can experience many discomforts including skin sores in areas of treatments. The skin can break out and peal to the point of exposing the flesh. When treating lung cancer with radiation there is risk of injury to the chest wall, skin, muscle, bone and the lung tissue itself.

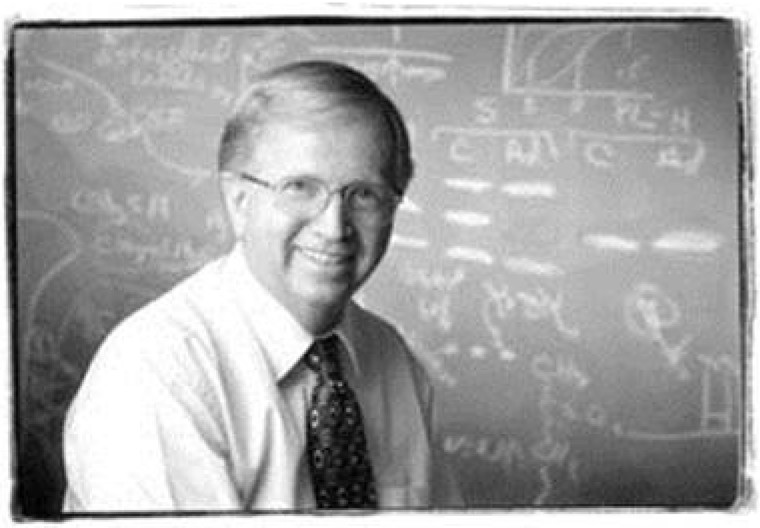
Doctors, specifically radiologists, are more than ready to line up their patients against a wall (actually a table) and fire nuclear projectiles at their bodies in massive quantities. People thus treated do not drop dead as fast as rifles loaded with lead but on a cellular level the death and devastation can be as great. Radiotherapy can leave patients with a lifetime of suffering, and life expectancy severely shortened.

Thousands of cancer survivors have developed terrible conditions as a result of the radiotherapy treatment that helped save them. Radiation treatments do, in the short run, save people and children's lives yet often at a terrible cost in the future. What is unforgiveable is that they do not try safer things first.

One of the worst consequences of radiation therapy is the development of a secondary cancer because increased radiation exposure leads to more incidences of cancer. The cancer epidemic is getting worse but it is a survivable disease; yet the treatments cause considerable collateral damage - including initiating new, second cancers, terrible burns, and a long list of other problems depending on the target area of treatment.

The Science of Radiation Exposure

Ionizing radiation is a proven and ubiquitous mutagen to which humans everywhere are exposed (medically, environmentally, and occupationally). Moreover, unlike some chemical mutagens, ionizing radiation is capable of inflicting every possible kind of mutation, from a single "base-change" to deletion of entire genes. It is especially potent at inducing complex genetic injuries that cannot be repaired.



It is the inability to see the effects of chronic,
low-level toxicities on human health that has been,
and remains, our greatest failing as intelligent beings.
Dr. Boyd Haley

Even " the smallest dose has the potential to cause a small increase in risk to humans" says a 2006 report from the National ReII arch Council arm of the National Academy of Sciences. This report, known as BEIR VII, is the latest in a long series of radiation health reviews done at the behest of the federal government. Under this theory, risk rises as exposure accumulates over time.

Alzheimer's Disease



It is a dream world for the anti-aging crowd. We now have the knowledge and the technology to extend our lives, enough medical firepower to press back against the hard edge of time. However, time is closing in on us, pressing us faster into disease and premature death. This is truer for city dwellers who breathe in more manmade poisonous pollution. Urban air pollution affects countries around the world, leading to premature aging, a wide range of health conditions, and early death.

Prospects for long-term happiness, health and a prolonged existence on earth are weakening. It is paramount that we use our intelligence, new medical devices and essential medicinals that can help us have better, longer and healthier lives. Life extension is not just about how long one lives but how well and healthy one stays. If our will to live is strong, we can gather our wits to defeat aging, disease and even death; however, not by the methods preached by the medical establishment.

Fear of Losing our Minds

One of the biggest fears that many of us have is the dread of losing our minds as we age.

Some fear this more than death itself because being trapped in a body that you no longer control, unable to perform the most basic human acts or communicate with those you love-sometimes for many years-is an entirely different kind of suffering. Imagine if your notion of who you are, who your family is, or what you did only a few minutes ago just slips away.

Alzheimer's disease, a severe form of dementia, affects an estimated 5.2 million Americans; 200,000 of which are under the age of 65. According to recent data, Alzheimer's disease kills more than half a million Americans per year, putting it in a neck and neck tie for the third leading killer in the U.S., right alongside medical errors, but behind heart disease and cancer.

A reported 700,000 plus have dementia in the UK, burdening the economy with a cost of more than £17 billion: The estimation for 2051 is around 1.7 million; that means roughly 2.5 times more dementia cases in the next 40 years, possibly costing well over £60 billion.

Medicine as a primary cause of Alzheimer's?

We read the headlines, 'No more Alzheimer's? World's first anti-aging drug could let you live more than 120 years in good health.' The side effects of Metformin, which medical scientists are laying their hopes on to achieve this mighty feat, can range from not so serious, to deadly. Making people sick is not the way to achieve health and added longevity!

Drugs that block acetylcholine, a nervous system neurotransmitter, have been shown to increase your risk of dementia. These drugs include certain nighttime pain relievers, antihistamines, sleep aids, certain antidepressants, medications to control incontinence and certain narcotic pain relievers

Statin drugs are particularly problematic because they suppress the synthesis of cholesterol and deplete your brain of coenzyme Q10 and neurotransmitter precursors. They prevent the adequate delivery of essential fatty acids and fat-soluble antioxidants to your brain, by inhibiting the production of the indispensable carrier biomolecule known as low-density lipoprotein. It should be noted that many of the pharmaceutical drugs mentioned above further increase magnesium deficiencies.

At Heart Alzheimer's is Mitochondrial Dysfunction

Many avoid a simple fact-at the heart of Alzheimer's is mitochondrial dysfunction. This

makes logical sense when we consider that our mitochondria are instrumental in producing the energy currency for our body, and without energy, nothing will work properly, especially the brain, which needs a lot of this energy. Hydrogen medicine has a lot to offer older people; Hydrogen helps avoid a decline into neurological disorders. Hydrogen is essential for the mitochondria. Mitochondria thrive on hydrogen!

Hydrogen Treatment for Autism



There are various factors which are involved in the etiopathogenesis of autism or autism spectrum disorder (ASD), such as impaired immune responses, neuro-inflammation, abnormal neurotransmission, oxidative stress, mitochondrial dysfunction, environmental toxins and stressors. What is currently understood:

� Oxidative stress plays a role.

� Autistic people have higher levels of oxidative stress markers in their urine (a measure of oxidative stress), and the more severe the autism, the higher the levels.

� Lipid peroxidation is increased.

� Glutathione levels are decreased.

Evidence that autistic children have a high level of oxidative stress has been provided through studies done by Dr. Sandra Jill James, Dr. Woody R. McGinnis, and other medical experts. They have discovered that autistic children have deficits in antioxidant capacity in order to counter the high level of oxidative stress in their body, and hence a lower detoxification capacity.

Dr. James is an expert in the study of the metabolic biomarkers of autism and genetic factors that may be mechanistically involved in the pathogenesis of autism. She and her team have found, in three independent case-control studies, that plasma levels of metabolites important for detoxification and antioxidant capacity are significantly decreased in the children with autism, relative to age-matched controls. This decrease in antioxidant/detoxification capacity was associated with evidence of oxidative DNA damage and mitochondrial dysfunction in immune cells. This suggests that children with autism may be more vulnerable to environmental factors that increase oxidative stress. More recently, she and her team have investigated brain tissue derived from individuals

with autism. They found similar deficits in antioxidant capacity as well as evidence of brain inflammation and mitochondrial dysfunction compared to unaffected brains.

Chronic inflammation in the brains of autistic patients, resulting from an over-active immune system is a sign of autoimmunity. The inflammation indicates that the brain is responding to a process that is stressing or damaging brain cells, a process which might include oxygen radicals.

Dr. Ahmad Ghanizadeh writes, "There should be an equilibrium between oxidative stress and antioxidant defense capacity. Oxidative stress plays a causative role for autism. While oxidative stress is increased in autism, methylation capacity is impaired. The deficit in antioxidant and methylation capacity in autism is a specific finding for autism. Glutathione (GSH) is responsible for the reduction of oxidative stress. The major intracellular redox (reduction/oxidation) buffer is GSH. The enzymes of superoxide dis-mutase (SOD), catalase, and glutathione peroxidase (GSH-Px) are involved in elimination of reactive oxygen species (ROS). The level of SOD and GSH-Px are increased in autism. This increase is explained in that the levels of oxidants are increased and these enzymes have already been triggered to counterbalance the oxidant and antioxidant levels. The increased level of ROS may oxidize some biomolecules such as membrane lipids.

A new study by researchers at UC Davis has found that children with autism are far more likely to have deficits in their ability to produce cellular energy than are typical for developing children. The study, published in the Journal of the American Medical Association (JAMA), found that cumulative damage and oxidative stress in mitochondria, the cell's energy producers, could influence both the onset and severity of autism, suggesting a strong link between autism and mitochondrial defects.[lxxx]

Autism is upon us because it's the outcome of
the 50-year experiment of dousing every living being
with an overload of toxic substances, including vaccines.
Dr. Gregory Ellis

Dr. Haley has shown in his laboratory at the University of Kentucky how even relatively benign substances like Tylenol and endocrine hormones like testosterone increase mercury's toxicity, which explains at least partially why more boys succumb to autism than girls. In reality there is nothing benign about Tylenol and nothing benign about antibiotics, another hell children have to face.

Medical scientists at Arizona State University tell us that **antibiotic use is known to**

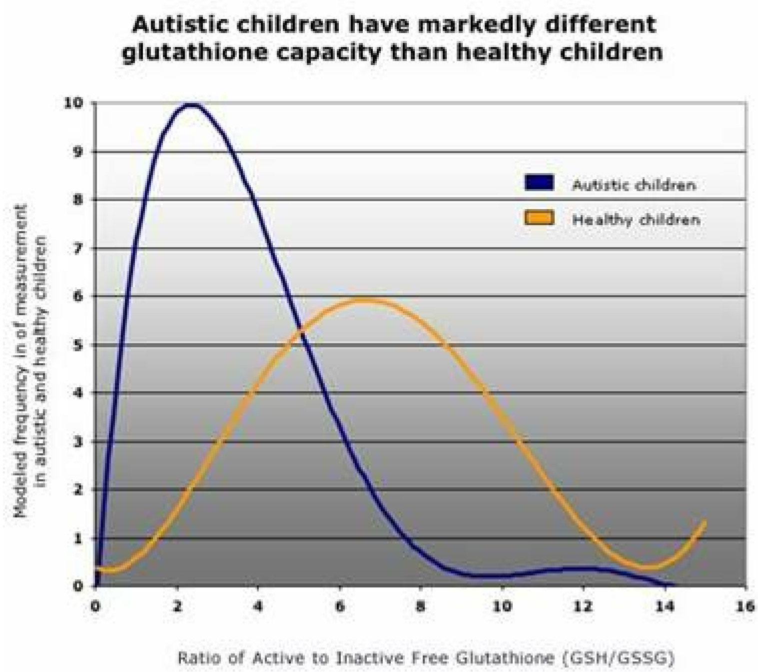
almost completely inhibit excretion of mercury in rats due to alteration of gut flora. Thus, higher use of oral antibiotics in children with autism may reduce their ability to excrete mercury. Higher usage of oral antibiotics in infancy may also partially explain the high incidence of chronic gastrointestinal problems in individuals with autism.[lxxxi]

What stands out in severe cases of autism is its similarity to symptoms found in mercury poisoning. "Thousands of parents have seen the regression of skills in their children following thimerosal-containing vaccines," says Jo Pike, President of the National Autism Association. "Many of these same children are progressing rapidly with biomedical interventions addressing mercury poisoning."[lxxxii] Dr. Sidney Baker, author of six medical books, treats hundreds of autistic patients each year from around the country. He suspects that about half of the children he sees have been affected by thimerosal from their vaccines.[lxxxiii]

The statement indicating "mercury has been phased out of most childhood vaccines" is a gross distortion of the truth. The flu vaccine contains mercury and the number of flu shots given to children has increased dramatically since 2004.
Dr. David Ayoub

Officials from every Pediatric organization in the world deny links between vaccines and autism; in fact they have gone over the deep end when some have actually had the audacity to assert that injected mercury could be good for children. The September 2004 issue of Pediatrics stated that immunizing infants with vaccines containing the preservative thimerosal may actually be associated with improved behavior and mental performance.[lxxxiv]

Mercury's (Hg) primary destruction comes from its creation of oxidative stress, depletion of glutathione, and bonding to sulfhydryl groups on proteins creating extensive damage. When glutathione levels go down oxidative stress goes up.[lxxxv]



Mercury alters biological systems because of its affinity for sulfhydryl groups, which are the functional parts of most enzymes and hormones. It induces a change in cell structure while disrupting critical electron transfer reactions, leading to cells being perceived as foreign by the body's immune defense and repair system.

-Dr. Rashid Buttar

The discovery of the causes of autism can be very threatening because doctors do not want to admit any guilt provoking responsibility. The walls of denial can be quite thick and it is most astonishing to meet up with a mind-set that cannot deal with the fact that the principal thing chemical poisons do is poison children. There is no doubt today that our children are being exposed to vastly increased levels of hostile chemicals. They are being hit from all sides and for many of them the process of poisoning begins even before birth. The medical industrial complex is guilty of hiding the ever present dangers of thousands of chemicals used by industry, because it itself is an industry that uses toxic chemicals in the form of drugs.

Conclusion

Toxicity accumulates over time, whether it is nutritional toxicity, emotional, physical, mercury-induced, or environmental. These toxins

deplete respiratory enzymes so these cells can no longer utilize oxygen.
-Dr. Michael Galitzer

Mercury offers the clearest picture of the chemical madness that has overtaken industry, medicine and dentistry, because it is one of the most well researched toxins in the environment. It is also the most toxic non-radioactive element, which, like radiation, is poisonous at any level including cellular. It is not just mad pediatricians who are injecting it; but dentists are installing it. Industry is producing it by the ton and expelling it into the atmosphere.

The most hotly contested and controversial theory contends that mercury present in childhood vaccines may be one of the leading factors contributing to the development of autism. Now aluminum is seen as equal culprit.

Add to that the accumulation of mercury across generations due to mercury amalgam dental fillings and the mercury coming out of smokestacks and we begin to see the shape of one of the principle causes of autism spectrum syndrome. It is not mercury exposure alone that causes problems, but rather exposure coupled with the child's decreased ability to excrete mercury properly. This decreased ability is primarily related to deep nutritional deficiencies and other variables and exposures.

Hydrogen, in high enough dosages should have a great positive affect on the autistic condition. In addition, because the respiratory chain has been disturbed, adding oxygen to the treatment makes more than good sense.

[lxxx] Children with autism have mitochondrial dysfunction. University of California - Davis Health System

[lxxxi] volume 70, issue 12 (2007) of the *Journal of Toxicology and Environmental Health, Part A;* "oral antibiotics will reduce the amount of normal gut flora (which demethylate methylmercury) and may increase the amount of yeast and *E. coli* (which methylate inorganic mercury), resulting in both higher absorption and decreased excretion of mercury."

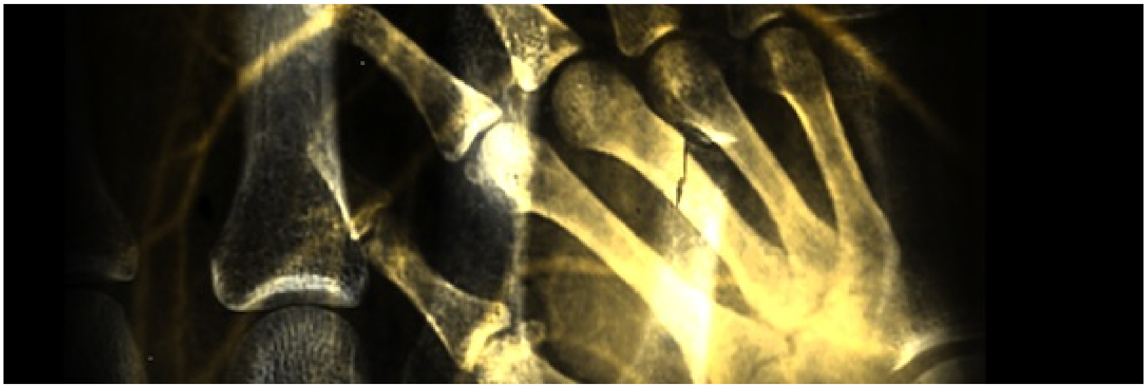
[lxxxii] National Autistic Association news bulletin in response to Institute of Medicine Report Spring 2004 http://www.nationalautismassociation.org

[lxxxiii] Williams, Valeri. Vaccine preservative's effects may have been known. http://www.laleva.cc/choice/vaccine_preservative.html

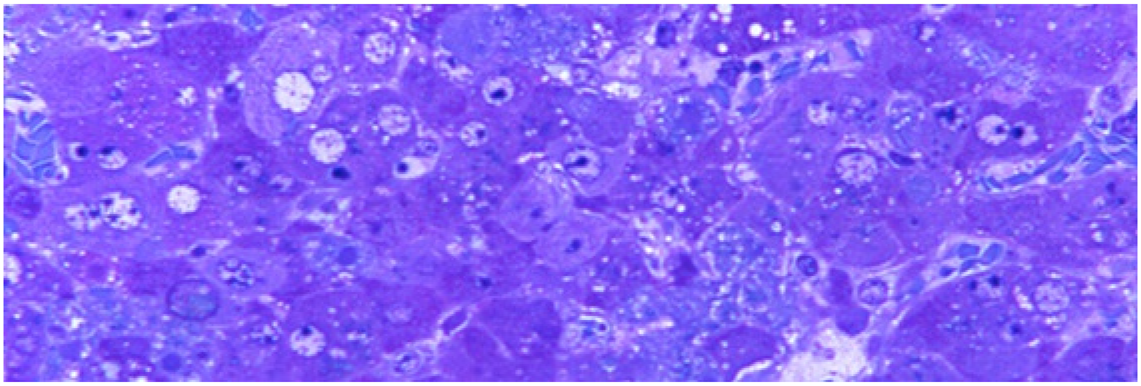
[lxxxiv] Vol. 114 No. 3 pp. 793-804 (doi:10.1542/peds.2004-0434)

[lxxxv] Curr Med Chem. 2005;12(10):1161-208. Metals, toxicity and oxidative stress.

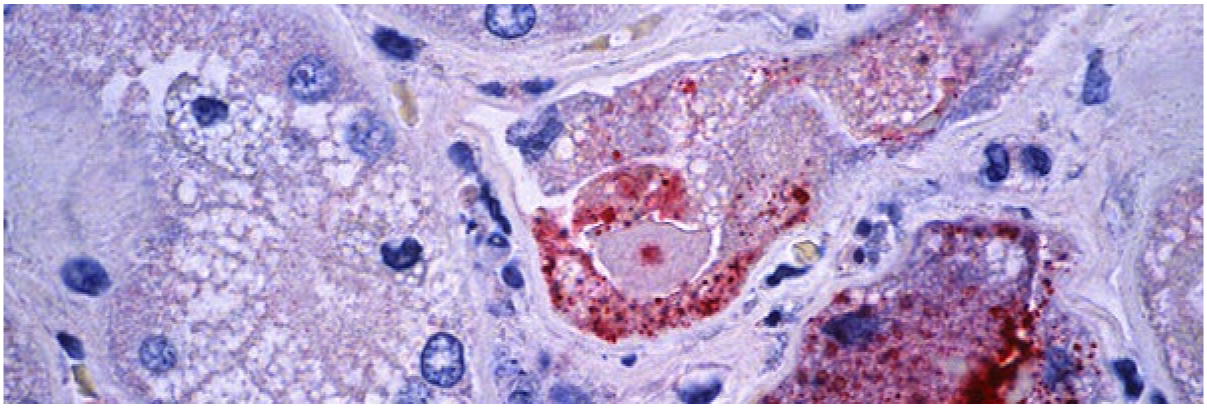
Human Studies



Twenty patients with rheumatoid arthritis (RA) drank 530ml of water containing 4 to 5ppm molecular hydrogen (high H_2 water) every day for 4 weeks. After a 4-week wash-out period, the patients drank high H_2 water for another 4 weeks. The 5 patients with early RA (duration <12 months) who did not show antibodies against cyclic citrullinated peptides (ACPAs) achieved remission, and 4 of them became symptom-free at the end of the study. The results suggest that the hydroxyl radical scavenger H_2 effectively reduces oxidative stress in patients with this condition. **The symptoms of RA were significantly improved with high H_2 water**.[lxxxvi]



Oxidative stress is obvious in chronic hepatitis B (CHB) patients, with liver function normally being significantly impaired. After hydrogen-rich water treatment (1200-1800 mL/day, twice daily) **liver function was improved significantly**. Hydrogen-rich water significantly attenuates oxidative stress in CHB patients.[lxxxvii]



Oxidative stress (OS) related to glucose degradation products such as methylglyoxal is reportedly associated with peritoneal deterioration in patients treated with peritoneal dialysis (PD). Effluent and blood samples of 6 regular PD patients were obtained during the peritoneal equilibrium test using standard dialysate and hydrogen-enriched dialysate. Mean proportion of reduced albumin in effluent was significantly higher in H_2-enriched dialysate than in standard dialysate. Likewise, serum �(HMA) after administration of hydrogen-enriched dialysate was significantly higher than that after standard dialysate. Trans-peritoneal administration of H_2 reduces peritoneal and systemic oxidative stress.[lxxxviii]

Chronic inflammation in haemodialysis (HD) patients indicates a poor prognosis and therapeutic approaches are limited. Changes in dialysis parameters showed significant decreases in levels of plasma monocyte chemoattractant protein 1 ($P < 0.01$) and myeloperoxidase ($P < 0.05$) when even low concentrations of hydrogen water were used. **Adding molecular hydrogen to haemodialysis solutions ameliorated inflammatory reactions and improved BP control**. Hydrogen offers a novel therapeutic option for control of uraemia.[lxxxix]

[lxxxvi] Ishibashi T, Sato B, Rikitake M, Seo T, Kurokawa R, Hara Y, et al. Consumption of water containing a high concentration of molecular hydrogen reduces oxidative stress and disease activity in patients with rheumatoid arthritis: an open-label pilot study. Med Gas Res. 2012;2:27.

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Jul 1;3(1):14.

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Inflammation, Oxygen, CO_2 and Breathing



Since the main thrust of this book is mastery of the three primary gases we need to look at the inescapable relationship between oxygen and CO_2. A lower than normal level of carbon dioxide in the blood leads to difficulties in releasing oxygen from haemoglobin. According to the Verigo-Bohr effect, a CO_2 deficit caused by over-breathing leads to oxygen starvation in the cells of the body. This state is known as hypoxia (oxygen deficiency) and it negatively affects the nervous system.

The complicated world of oxygen, carbon dioxide, and tissue pH are important areas because our body simply cannot fight disease if it's pH is not properly balanced. Consequently the oxygen-carrying capacity of our cells becomes compromised. It's really simple-higher pH conditions lead to higher O_2 levels and this results in oxygen being delivered where it is needed.

The key to oxygen is not more oxygen but more carbon dioxide, which is a nutritious gas, not a poison. Doctors at the Department of Anaesthesia and Medical-Surgical Intensive Care Unit, Toronto General Hospital in Ontario, Canada say that, "Accumulating clinical and basic scientific evidence points to an **active role for carbon dioxide in organ injury**, in which raised concentrations of carbon dioxide are protective and low concentrations are injurious."

Carbon dioxide executes uncountable functions in the human organism. Among them are: repair of alveoli in lungs, stability of the nerve cells, regulation of pulse, normal

immunity, blood pressure maintenance, dilation of bronchi and bronchioles, **regulation of blood pH**, sleep control, relaxation of muscle cells, release of O_2 in capillaries (the Bohr effect), weight monitoring and other essential functions.

Hemoglobin helps to transport hydrogen ions and carbon dioxide in addition to transporting oxygen. However, transport by hemoglobin accounts for only about 14% of the total transport of these species; **both hydrogen ions and carbon dioxide are also transported in the blood as bicarbonate (HCO_3^-), formed spontaneously or through the action of carbonic anhydrase**.

Sodium bicarbonate (baking soda) is the stunning medicine it is because it puts doctors' and patients' fingers on the CO_2 pulse of the body. Bicarbonate intake raises the CO_2 levels in the blood. **CO_2 is a key regulator of inflammatory reactions due to control of cells oxygen supply**. Bicarbonate also regulates inflammatory reactions due to rapid changes in tissue and fluid pH.

In all serious disease states we find a concomitant low-oxygen state. Low oxygen in the body tissues is a sure indicator for disease. Hypoxia, or lack of oxygen in the tissues, is the fundamental cause for all degenerative disease.
Dr. Stephen Levine
Molecular Biologist

In order to survive, the body must maintain proper acid/alkaline (pH) balance because when it does not do so, tissue oxygen levels suffer. The optimum (and required) pH of the blood is somewhat alkaline, between 7.35 and 7.45. **Only in this range is the blood richly supplied with oxygen.**

Oxygen, Inflammation & Hypoxia-Inducible Factor (HIF-1)

Scientists in Germany have shown that the microenvironment of inflamed and injured tissues are typically characterized by low levels of oxygen and glucose, and high levels of inflammatory cytokines, reactive oxygen, and nitrogen species and metabolites. Medical research has suggested that there is a strong link between cell hypoxia (oxygen deficiency in cells) and chronic inflammatory processes.

Inflammation is the most common causes of tissue hypoxia and/or decreased circulation. Inflammation can lead to sepsis, circulatory collapse and ultimately multi-system organ failure.

Tissue hypoxia is manifested in increased levels of hypoxia-inducible factor (HIF-1) (this factor and cell hypoxia are key factors in the progress of cancer). Elevated HIF-1 triggers a cascade of events, with involvement of **pro-inflammatory transcription factors** such as nuclear factor kappa B (or NF-kappaB) and activator protein AP-1.

When oxygen levels fall things get dangerous on a cell level because at low levels gene expression changes. HIF-1a regulates the expression of at least 30 genes when oxygen levels are low.

Cancer & HIF-1

"Radiation and chemotherapy do kill most solid tumor cells, but in the cells that survive, the therapies drive an increase in HIF-1, which cells use to get the oxygen they need by increasing blood vessel growth into the tumor. **Solid tumors generally have low supplies of oxygen** and HIF-1 helps them get the oxygen they need," explains Dr. Mark W. Dewhirst, professor of radiation oncology at Duke University Medical Center.

Dr. Holger K. Eltzschig, a professor of anesthesiology, medicine, cell biology and immunology at the University of Colorado School of Medicine, says, "**Understanding how hypoxia is linked to inflammation may help save lives.** By focusing on the molecular pathways the body uses to battle hypoxia, we may be able help patients who undergo organ transplants, who suffer from infections or who have cancer."

*Researchers found that an increase of 1.2 metabolic units (oxygen consumption) was related to a decreased risk of cancer death, especially in lung and gastrointestinal cancers.**[xc]***

In order for cancer to "establish" a foothold in the body it has to be deprived of oxygen and become acidic. If these two conditions can be reversed cancer not only can be slowed down, but it also can actually be cured.

Drs. D. F. Treacher and R. M. Leach write, "**Prevention, early identification, and correction of tissue hypoxia are essential skills.** If the oxygen supply fails, even for a few minutes, tissue hypoxaemia may develop, resulting in anaerobic metabolism and production of lactate."[xci]

Oxygen levels are sensitive to a myriad of influences. Toxicity, emotional stress, physical trauma, infections, reduction of atmospheric oxygen, nutritional status, lack of exercise and especially improper breathing will all affect the oxygen levels in our bodies. **Anything that threatens the oxygen-carrying capacity of the human body will promote cancer growth.** Likewise any therapy that improves oxygen function

can be expected to enhance the body's defenses against cancer.

Using Magnesium to Raise Oxygen-Carrying Capacity

The data shows that **magnesium-deficient people use more oxygen during physical activity**-their heart rates increased by about 10 beats per minute. "When the volunteers were low in magnesium, they needed more energy and more oxygen to do low-level activities than when they were in adequate-magnesium status," says physiologist Henry C. Lukaski.[xcii]

Magnesium enhances the binding of oxygen to haem proteins.[xciii] There is probably some kind of magnesium pump where oxygen climbs aboard the red cells and magnesium jumps off only to have to jump right back on again. Red blood cells have a unique shape known as a biconcave disk, which is mission-critical for oxygen transport. Magnesium is important to red blood cell shape and function. The interaction of calcium, magnesium and ATP with membrane structural proteins exerts a significant role in the control of the shape of human red blood cells.[xciv]

Abnormal **magnesium-deprived red blood cells** lack the flexibility that allows them to enter tiny capillaries. These nondiscocytes are characterized by a variety of irregularities, including surface bumps or ridges, a cup or basin shape, and altered margins instead of the round shape found in discocytes. When people become ill or physically stressed (more magnesium-deficient), a higher percentage of discocytes transform into the less flexible nondiscocytes.

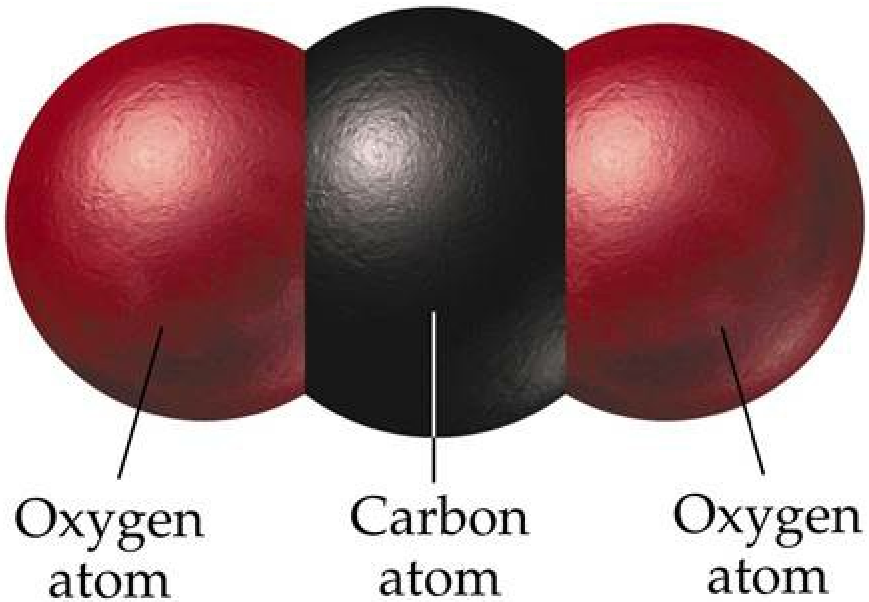
[xci] BMJ. 1998 November 7; 317(7168): 1302-1306

[xcii] http://www.agclassroom.org/teen/ars_pdf/family/2004/05lack_energy.pdf

[xciii] Terwilliger and Brown, 1993; Takenhiko and Weber; Wood and Dalgleish, 1973

[xciv] http://bloodjournal.hematologylibrary.org/cgi/reprint/44/4/583.pdf

The Oxygen Carbon Dioxide Connection



Most people have unhealthy breathing habits. They hold their breath or breathe high in the chest or in a shallow, irregular manner. These patterns have been unconsciously adopted, accidentally formed, or emotionally impressed.

Certain "typical" breathing patterns actually trigger physiological and psychological stress and anxiety reactions. Babies know how to breathe and you can see their belly expand as the diaphragm moves down. Adults breathe more through expanding their chest cavity and it takes training and discipline to return to more natural breathing patterns that allow for full oxygenation.

A lack of carbon dioxide is harmful though many climate hysterics are running around loudly proclaiming that we have too much and should put a tax on it. Carbon dioxide is as fundamental a component of living matter as is oxygen and if you do not agree, go ask plants! When people have bicarbonate deficiencies (acid conditions, which most people develop as they age), they have carbon dioxide deficiencies, which translate into oxygen deficiencies.

If a carbon dioxide deficiency continues for a long time, then it causes diseases, aging and even cancer, because oxygen is not being delivered properly to tissues. Ancient forms of medicine knew that for increased vitality and freedom from disease good habits of breathing must be formed. They knew that poor breathing reduces our vitality and opens the door to disease.

Yin Yang of Respiration

The important thing is the relationship between gases - between carbon dioxide and oxygen. Too much oxygen (relative to the level of carbon dioxide) and we feel agitated and jumpy. Too much carbon dioxide (again, relative to the level of oxygen) and we feel sluggish and sleepy and tired.

A natural misconception most doctors maintain is that oxygen and carbon dioxide are antagonistic that a gain of one in the blood necessarily involves a corresponding loss of the other. This is not correct; although each tends to raise the pressure and thus promote the diffusion of the other, the two gases are held and transported in the blood by different means; the hemoglobin in the corpuscles carry oxygen, while carbon dioxide is combined with alkali in the plasma.[xcv]

A sample of blood may be high in both gases, or low in both gases. **Under clinical conditions, low oxygen and low carbon dioxide generally occur together.Therapeutic increase of carbon dioxide, by inhalation of this gas diluted in air, is oftenan effective means of improving the oxygenation of the blood and tissue.**[xcvi]

The Verigo-Bohr Law

Remembering from the last chapter that the Verigo-Bohr concludes that a CO_2 deficit, caused by too rapid breathing, leads to oxygen starvation, we know that chronic hyperventilation (over-breathing), common amongst western populations, leads to impaired oxygenation of body tissues.

Biologist Dr. Ray Peat tells us that, "Breathing pure oxygen lowers the oxygen content of tissues; **breathing rarefied air, or air with carbon dioxide, oxygenates and energizes the tissues**. If this seems upside down, it's because medical physiology has been taught upside down, and respiratory physiology holds the key to the special functions of all the organs, and to many of their basic pathological changes."[xcvii]

People who live at very high altitudes live significantly longer;
they have a lower incidence of cancer (Weinberg, et al., 1987)
and heart disease (Mortimer, et al., 1977), and other
degenerative conditions, than people who live near sea level

Dr. Peat says, "**Breathing too much oxygen displaces too much carbon dioxide,** provoking an increase in lactic acid; too much lactate displaces both oxygen

and carbon dioxide. Lactate itself tends to suppress respiration. Oxygen toxicity and hyperventilation create a systemic deficiency of carbon dioxide. It is this carbon dioxide deficiency that makes breathing more difficult in pure oxygen, that impairs the heart's ability to work, and that increases the resistance of blood vessels, **impairing circulation and oxygen delivery to tissues.** In conditions that permit greater carbon dioxide retention, circulation is improved and the heart works more effectively. **Carbon dioxide inhibits the production of lactic acid**, and lactic acid lowers carbon dioxide's concentration in a variety of ways."[xcviii]

Wound Healing with Carbon Dioxide and Oxygen

Look below at the profound healing effect of carbon dioxide. The following shows treatment effects of CO_2 medicine for a diabetic foot. Carbon dioxide footbath therapy was developed as a means for healing diabetic foot and other ischemic ulcers.[xcix] This healing was accomplished with sodium bicarbonate baths laced with some citric acid, which breaks down the bicarbonate into CO_2 micro bubbles.



This is before, then one month and three months after treatment. The only other treatment that comes close to helping a diabetic foot like this is magnesium therapy, which combines beautifully in baths with bicarbonate and CO_2 medicine therapies. Soaking in sodium bicarbonate baths with citric acid added turns the bicarbonate into micro bubbles of carbon dioxide.



Now we can see and compare the same type of treatment with oxygen and see the results are the same. The University of Tennessee Medical School shows what oxygen can do for wound healing.[c] **Every cell in our body has the ability to recognize and respond to changes in the availability of oxygen**. The best example of this is when we climb to high altitudes where the air contains less oxygen. The cells recognize the decrease in oxygen via the bloodstream and are able to react, using the 'hypoxic response', to produce a protein called EPO (erythropoietin). This protein in turn stimulates the body to produce more red blood cells to absorb as much of the reduced levels of oxygen as possible. [ci]

We can literally force mitochondria to become active again and use the Krebs cycle for energy if we ram enough oxygen into the cells. This process is facilitated when hydrogen is added.

If you put enough oxygen and hydrogen into a cancer cell it will turn on the Krebs cycle (the mitochondria) and this reignites the program for cell death. Remember carbon dioxide is the main product of the Krebs Cycle so carbon dioxide levels go up and this is of course healthy. This is why exercise is so important to our health. It is the very best way to create lots of CO_2!

[xcv] http://www.rsc.org/Education/Teachers/Resources/cfb/transport.htm

[xcvi] http://drsircus.com/world-news/climate/co2#_edn5

[xcvii] ibid

[xcviii] http://raypeat.com/articles/aging/altitude-mortality.shtml

[xcix] CO_2 footbath therapy; http://www.co2bath.com/top.htm

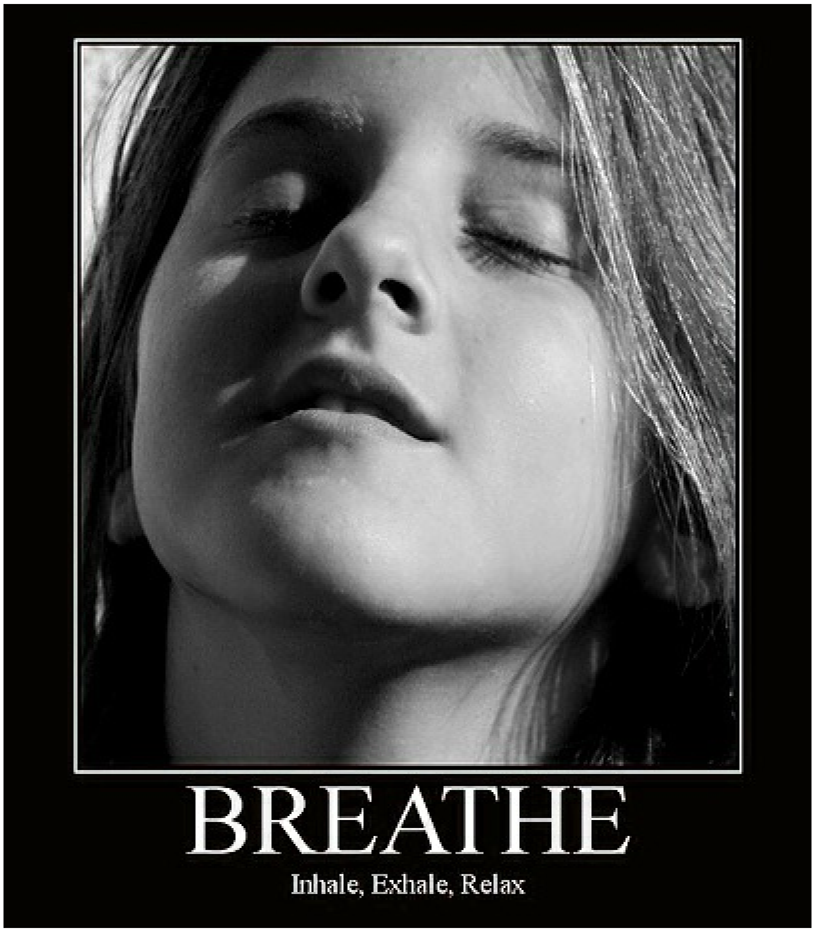
[c] University of Tennessee; Hyperbaric Oxygen;

http://www.utcomchatt.org/subpage.php?pageId=838

[ci]Acute normobaric hypoxia stimulates erythropoietin release.

Mackenzie RW1, Watt PW, Maxwell NS.; High Alt Med Biol.; 2008 Spring; 9(1):28-37. doi: 10.1089/ham.2008.1043; http://www.ncbi.nlm.nih.gov/pubmed/18331218

Increasing CO_2 Blood Concentrations



All doctors should know that chronically and even seriously ill people with dangerous acute infections benefit immediately from controlling the quantity of air going into and out of their lungs. With a simple breathing device-based on CO_2 physiology-in the space of 20 minutes a day, one can begin, quite quickly, to get control of several important medical parameters, the most important of which is oxygen delivery to cells and tissues.

"Medical textbooks suggest that the normal respiratory rate for adults is only 12 breaths per minute at rest. Older textbooks often provide even smaller values (e.g., 8-10 breaths per minute). Most modern adults breathe much faster (about 15-20 breaths per minute) than their normal respiratory rate. Respiratory rates in the sick are usually higher, generally about 20 breaths/min or more," writes Artour Rakhimov. The higher you go over 12 the less oxygen a person's tissues will have.

When we practice breathing retraining it is almost like standing on a chariot with four

wild horses. We pull back on the reins-limiting the air flow, slowing everything down-we increase electron flow, raising cellular voltage, pH, and oxygenation as well as carbon dioxide levels.

More is Less

Medical studies have proven that **the more we breathe, the less oxygen is provided for the vital organs of the body**. Does that sound upside down to you? Ideal breathing corresponds to very slow, light, and easy abdominal breathing (also called diaphragmatic or belly breathing), something that needs to be relearned. Diaphragmatic breathing allows one to take normal breaths while maximizing the amount of oxygen that goes into the bloodstream.

"Deep breathing" exercises and techniques, to anyone who knows something about breathing, does not suggest in any way that one should actually over breathe. Deep breathing is just another way of saying belly breathing as opposed to shallow superficial chest breathing. Deep breathing should be very slow so that one accumulates more CO_2 in the blood. Deep breathing means breathing less air not more. Some people actually think it is wrong to call therapeutic breathing 'deep breathing'. If you breathe less and accumulate CO_2, the correct name is 'reduced breathing'", writes Rakhimov.



When we breathe less-using a breathing device-we directly influence the involuntary (sympathetic nervous system) that regulates blood pressure, heart rate, circulation, digestion and many other bodily functions. Breath is life so we can expect to feel more alive, vibrant and healthy if we bring our awareness to our breath and retrain the way we breathe. When we breathe perfectly we can live more perfectly in health because our

breath is the most important source of energy. Hippocrates said, "Air is a pasture of life and a greatest ruler of all." I suppose he knew what ancient oriental philosophers knew-that in the air is "an ocean of energy" ready to be directly tapped into.

We all breathe, all day, every day, so we might as well do it right. Since a breath is the very first and last physical activity we undertake in life, we should give it the consideration and importance it deserves in our pursuit of health and relaxation. We can live a long time without food and a couple of days without drinking, but life without breath is measured in minutes. Unfortunately, it seems that unless one participates in or teaches yoga, breathing does not get the attention it deserves.

The American Academy of Cardiology says, "Stress can cause shortness of breath or make it worse. Once you start feeling short of breath, it is common to get nervous or anxious. This can make your shortness of breath even worse. Being anxious tightens the muscles that help you breathe, and this makes you start to breathe faster. As you get more anxious, your breathing muscles get tired. This causes even more shortness of breath and more anxiety. At this point, you may panic."

Learning to avoid or control stress can help you avoid this cycle. You can learn tips to help you relax and learn breathing techniques to get more air into your lungs.
American Academy of Cardiology

Benefits of Slow Breathing

1. Breathing detoxifies and releases toxins.

2. Breathing releases tension.

3. Breathing relaxes the mind/body and brings clarity.

4. Breathing relieves emotional problems.

5. Breathing relieves pain.

6. Breathing massages your organs.

7. Breathing increases muscle.

8. Breathing strengthens the immune system.

9. Breathing improves posture.

10. Breathing improves quality of the blood.

11. Breathing increases digestion and assimilation of food.

12. Breathing improves the nervous system.

13. Breathing strengthens the lungs.

14. Proper breathing makes the heart stronger.

15. Proper breathing assists in weight control.

16. Breathing boosts energy levels and improves stamina.

17. Breathing improves cellular regeneration.

18. Breathing elevates moods.

Even *Readers Digest* gets into writing about breathing saying, "What could be more basic than breathing? Inhale, exhale, repeat... right? Not exactly. While western science and medicine focus on breathing as a bodily function integral to survival, eastern health sciences approach it as nourishment for both body and spirit. The Chinese believe that mindful breathing, or "breath work," has numerous benefits, including improved focus and efficiency, increased positivity, and greater physical and mental energy."

Breathing to Live Longer



"The body can store many of the things it needs to function such as vitamins and food in the form of fat. Oxygen is one item that cannot be stored in sufficient quantities for more than a few minutes. At rest, the blood holds about a quart of dissolved oxygen, but it is

continually being used by the cells to produce energy. The lungs need to be constantly working to furnish a sufficient supply for various activities."

Your breathing or respiratory rate is defined as the number of breaths a person takes during a one-minute period while at rest. Recent studies suggest that an accurate recording of respiratory rate is very important in predicting serious medical events. Since many factors can affect the results, understanding how to take an accurate measurement is important. While watching a clock, count the number of times you breathe in two minutes. Make three trials, and find the average. Divide by two to find the average number of breaths per minute.

The rate should be measured at rest, not after someone has been up and walking about. Being aware that your breaths are being counted can make the results inaccurate, as people often alter the way they breathe if they know it is being monitored. Nurses are skilled at overcoming this problem by discretely counting respirations, watching the number of times your chest rises and falls - often while pretending to take your pulse.

Lung expert Dr. Lynne Eldridge says that, "In general, children have faster respiratory rates than adults, and women breathe more often than men. The normal ranges for different age groups are listed below:

Newborn: 30-60 breaths per minute

Infant (1 to 12 months): 30-60 breaths per minute

Toddler (1-2 years): 24-40 breaths per minute

Preschooler (3-5 years): 22-34 breaths per minute

School-age child (6-12 years): 18-30 breaths per minute

Adolescent (13-17 years): 12-16 breaths per minute

Adult: 12-18 breaths per minute

Dr. Sheldon Saul Hendler writes, "Breathing is unquestionably the single most important thing you do in your life. And breathing right is the single most important thing you can do to improve your life." So what is the actual difference to our lives and health when we breathe less? You will be astounded by the information that Michael White has put together. 85,000 people filled out his questionnaire on his site yielding the following vital information:

B.Complete Breaths vs. K1.Diagnosed Conditions

B/K1	d.Anxiety or panic attacks			f.Attention issues			t.High blood pressure			ee.Sleeping disorders			m.Depression			z.Overweight/Obese		
	% of total test takers	% of test takers with row choice	% of test takers with column choice	% of total test takers	% of test takers with row choice	% of test takers with column choice	% of total test takers	% of test takers with row choice	% of test takers with column choice	% of total test takers	% of test takers with row choice	% of test takers with column choice	% of total test takers	% of test takers with row choice	% of test takers with column choice	% of total test takers	% of test takers with row choice	% of test takers with column choice
5-6	1.4	13.8	6.5	0.2	1.8	3.9	1.4	13.8	9.2	0.5	4.6	4.7	0.8	8.3	5.4	1.5	15.6	8.3
7-8	3.0	22.0	14.3	0.5	3.3	9.8	2.2	16.0	14.7	1.2	8.7	12.1	2.3	16.7	14.9	2.6	19.3	14.1
9-11	5.1	22.0	24.2	0.7	3.1	15.7	3.4	15.0	23.3	2.4	10.6	25.2	3.1	13.4	20.2	4.3	18.5	22.8
12-24	9.5	22.0	45.5	2.6	6.1	56.9	6.1	14.0	41.1	4.2	9.6	43.0	7.6	17.6	50.0	9.0	20.8	48.1

Courtesy breathing.com

Dr. Fred Muench, says, "Once you go below 10 breaths a minute you start to engage the parasympathetic nervous system, which helps the body relax when it has been injured. Slow breathing activates the vagus nerve, the primary cranial nerve, which is associated with a recuperative state." Perhaps more important, slow breathing tends to increase heart-rate variability, a measurement of the fluctuation in heartbeat during an activity. "If your heart rate fluctuates 60 to 80 beats per minute, cardiac-wise that's healthier than someone whose heart rate varies between only 70 and 75 beats per minute," says Muench. "It means your system is not so rigid. Someone like Lance Armstrong has a massive swing in heart-rate variability, whereas an unhealthy or older person has a much smaller one. **The way to increase variability is to breathe slowly**."

A person who is breathing at four breaths a minute will only breathe about 5,760 times a day. At the "normal" breathing rate of eight breaths a minute that count doubles to 11,520 breaths a day. At 16, which is still slow for many ill people that rate reaches to 23,000 breaths a day. At 25 breaths a minute, we are clipping along at 36,000 breaths a day, which is a far cry above a normal rate.

Dr. Buteyko found that virtually all sick people (asthma, bronchitis, heart disease, diabetes, cancer, etc.) have accelerated respiratory patterns. During rapid breathing carbon dioxide becomes deficient, oxygen delivery to the cells is reduced, breath-holding time is reduced, and the natural automatic pause is absent in each breath.

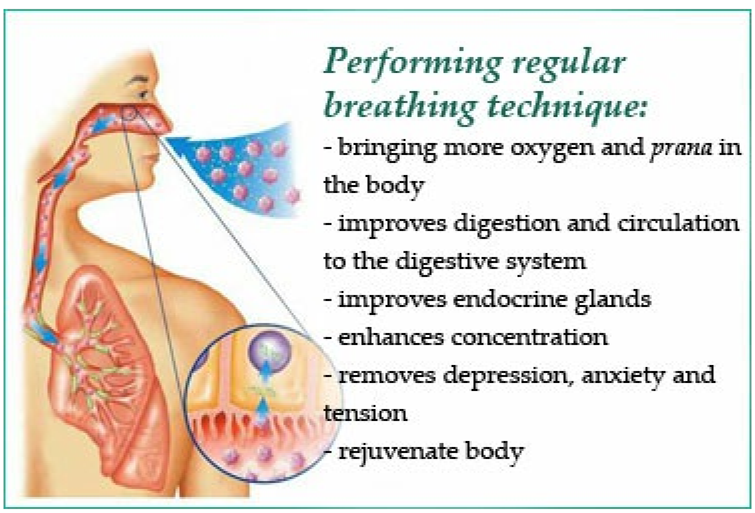
After thirty years of studying over 5,000 patients in what was called the Framingham studies, doctors from the Boston University School of Medicine said they could predict both long-term and short-term mortality based on peoples' breathing capacity. Dr. William Kannel said a person's vital breathing capacity can, "Pick out people who are going to die 10, 20 or 30 years from now."

Al Lee and Don Campbell in their book *Perfect Breathing* say, "The impact of the breath

extends into every aspect of life and shows itself at the root of human function. Ancient teachers, sages, yogis, and martial artists discovered its power and developed disciplines around it with yoga and qigong and karate, among so many other practices. Understanding the breath means understanding the human machine and how each breath can be used to develop and control the body. Breathing forms the foundations of meditation, contemplative thought and prayer, but it is also informing science and medicine, as conscious breathing proves its mettle as a tool to fight stress, build up immunity to disease, and heal the body in many ways. What is a perfect breath? Far from being some noble yet unreachable goal that takes years of rigorous practice to master, a perfect breath is any breath you take for which you are completely mindful and aware. In the space of that one simple breath, great things can be accomplished. Perfect breathing is absolutely attainable, and within easy reach. In fact, your very next breath can be a perfect breath."

Warning: Depending on the severity and type of the condition, patients can worsen their health if they go into intensive breathing sessions too aggressively. Some critically ill patients can develop even higher blood pressure, panic attacks, and migraine headaches from aggressive and rapid changes in breathing.

Diaphragmatic Breathing



Most modern people suffer from breathing problems. The common problems include chest breathing (as opposed to abdominal diaphragmatic), mouth breathing, and hyperventilation (breathing too fast), all of which reduce oxygen levels in body cells and promote chronic diseases. Bottom line is the quicker we breathe the sicker we become. Breathing too fast will end one in a casket if one is not careful, and certainly life will be lived with pain and disease unless one gets control.

Dr. Nerina Ramlakhan writes, "I noticed that over 75% of the clients (not patients - these were 'well' corporate employees) were breathing sub-optimally in ways that would make them stressed, chronically exhausted, overweight and insomniac. It is very important to our health to get our breathing right. My advice is simple - just for 21 days become even slightly obsessed with your breathing. Notice it five times a day: first thing in the morning before you get out of bed, last thing at night as you drift off to sleep, and then find three other times during the day. Put your feet on the ground, drop your breathing into your belly, exhale long and inhale fat. Breathe well consciously so you can breathe well unconsciously."

When you take a truly deep breath, you are expanding the lungs, pressing down the diaphragm, and causing your abdomen to expand as your lungs fill with air. This is not only wonderful for reducing tension, but research has shown that it may also help with diseases that inhibit breathing, like emphysema.

Diaphragmatic breathing effectively calms us down. It also makes sure that you take in lots of oxygen. If you are not sure you are breathing deeply enough try lying down and putting a magazine on your stomach. Make sure you expel all your air, exhaling completely, and then slowly raise the magazine as you inhale. Inhale for five nice, long counts. Exhale the same way, counting until the magazine goes down. You can also use your hand instead of a magazine.

Breathing retraining has a lot to offer anxious hyper-tense patients. Anxious people are experiencing sympathetic nervous system (the fight or flight system) over-arousal. Slow breathing reduces sympathetic nervous system over-arousal and increases parasympathetic nervous system activity - the relax, recuperate, regenerate system - which calms people down.

Vagus Nerve

Breathing retraining increases vagal nerve tone. The vagus nerve is the primary pacifying nerve in the body. Increased vagus nerve tone activates parts of the body that need activating and quells the parts that need to be relaxed.

Dr. Fred Muench said, "The breath's effects on the vagus occur primarily during exhalation. During exhalation, your heart rate decelerates and during that period of deceleration, the vagus becomes active. Shallow, rapid breathing patterns inhibit the vagus because the period of vagal activity is too short and the nerve does not have time to pacify the other nerves that it touches. It really is a simple mechanism. By slowing down your breathing, you create more vagal activity, accentuating its relaxing and

regenerating effects." With devices such as the Frovlov we can train our self to decelerate our breathing through prolonging our exhalation.

In the beginning, one can take deep breaths, the secret is to unlock your diaphragm and return to the way you breathed when you were born. For total beginners in conscious breathing this is difficult because the diaphragm is frozen. When we close our hearts and feelings of vulnerability, we tend to stop breathing with the diaphragm.

Conscious Breathing and its Effect on the Heart

According to yoga, energy flows more freely through the heart when we breathe into it and focus our attention on that area - energy flows where attention goes. Breathing is directly linked to and directly affects the heart. The regular practice of diaphragmatic breathing significantly improves heart rate variability and *coherence*. All dynamics of the heart are improved when we breathe correctly. The more a person improves their heart rate variability (HRV) the healthier they become. This is good for ischemic heart patients who have diabetes.[cii] Heart rate variability is indispensable in distinguishing healthy subjects from patients with cardiovascular disease.

Heart rate variability (HRV) is an indicator of the cardiac autonomic control. Yogic, or what is known as belly breathing (deep abdominal breathing vs. shallow rib cage breathing), modifies the autonomic status by increasing sympathetic activity (reduced vagal activity). Its uncanny how accurately low HRV scores and trends align with illness.

HRV is a more useful psychophysiological measure than heart rate alone. The heart rate is controlled by neural as well as other factors. Hence, a decrease in heart rate may be related to an increase in vagal tone, a decrease in cardiac sympathetic activity, as well as other, non-autonomic factors. Heart rate variability (HRV) spectrum is indicative of beat-to-beat autonomic control.[ciii]

Ancient yoga breathing techniques not only regulate the heart but also stimulate and increase vital energy, strengthen internal organs and thus regenerate and rejuvenate the body. Through breathing consciously, we can achieve the optimal functioning of the endocrine, nervous, digestive and other bodily systems, and gain mental and physical stability.

When your exhale is even a few counts longer than your inhale, the vagus nerve sends a signal to your brain to turn up your parasympathetic nervous system and turn down your sympathetic nervous system. The sympathetic system commands our fight or flight response, and when it is stimulated it increases heart rate and breathing, and also

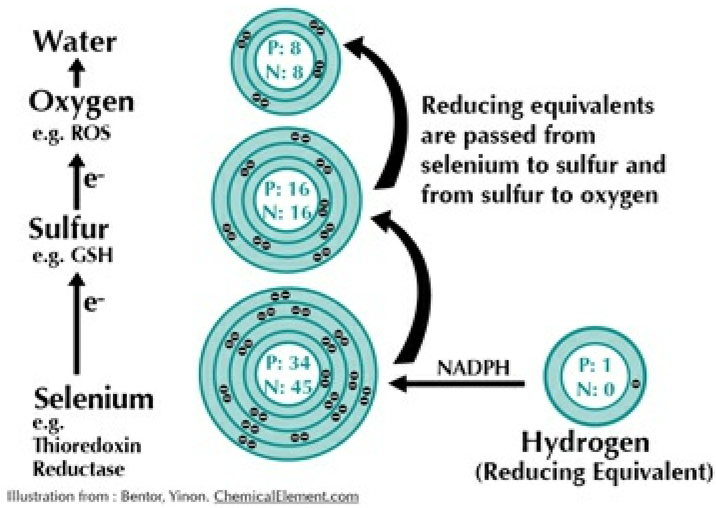
increases stress hormones like cortisol. The parasympathetic system, on the other hand, controls your rest-relax-and-digest response. When the parasympathetic system is dominant, your breathing slows, your heart rate drops, your blood pressure lowers as the blood vessels relax, and your body is put into a state of calm and healing.

[cii] Arq Bras Cardiol. 2009 Jun;92(6):423-9, 440-7, 457-63.

Effect of diaphragmatic breathing on heart rate variability in ischemic heart disease with diabetes.

[ciii] Indian J Physiol Pharmacol 1998; 42 (4) : 467-472

Selenium, Sulfur and Magnesium Secrets



Oxygen is closely related to sulfur and selenium. Oxygen, sulfur and selenium share chemical properties and reactivity, and each one follow the previous one in a single column of the periodic table. Oxygen is the fire of life itself and loves to grab electrons from other molecules. Unfortunately this causes oxidation, which must be quenched to avoid tissue damage.

Sulfur, right under oxygen, is a little bit bigger in atomic size, and so its outer electrons are less tightly bound. Selenium is bigger still, and it holds electrons even less tightly than sulphur. This means that selenium is best at passing electrons and sulphur is second best, while oxygen holds on the strongest. Sulfur and selenium can help metabolism when oxygen levels are low.

Any form of stress reduces oxygen dissolved in blood plasma. Stress comes in many forms - anxiety, dehydration, toxins, physical trauma, infection, and so on. Stress decreases the amount of oxygen dissolved in your body fluids, and decreases the amount of oxygen that reaches cells. Stress causes cellular suffocation.

Many factors interfere with blood-to-tissue oxygen delivery: tissue pH, vascular inflammation, cellular malnutrition and more.[civ]

The ability of sulfur/selenium thiol compounds, specifically magnesium thiosulfate and sodium thiosulfate, to enable the body to overcome hypoxic acidosis, explains many therapeutic effects of sulfur and selenium. Thiol compounds carry oxygen analogs as

sulfur or selenium, which are small enough to enter sick tissue and help restore normal oxygen metabolism. They seemingly help anaerobic tissue compensate for hypoxia by fueling aerobic metabolism.

From the very moment of conception, life can be sparked by the unique redox environment created when a sperm fertilizes an egg. **The sperm is extremely rich in proteins containing the mineral selenium, which is a potent reducing agent for glutathione,** the most important antioxidant molecule in cells. **The egg,** on the other hand, **is very rich in glutathione.** Bring these two potent antioxidant strategies together, and you create an exceptionally reduced cell that can initiate life and promote development using the power of redox. **That reducing power provides a metabolic spark as new life begins its journey,** allowing the rapidly dividing cells to safely maintain a high rate of oxidation.

The Ultimate Biological Molecule

The ultimate sulfur molecule is glutathione, and its function in life is to combat oxidative stress. In reduced form it is a reservoir for electrons and the most potent antioxidant we make. Selenium is an ideal carrier for electrons. It picks them up easily but just as easily gets rid of them.

We must have enough selenium from the diet to combat oxidative stress. Some soils are famous for being extremely selenium-deficient and resulted in higher rates of hypothyroidism, goiter, cretinism, miscarriages, and extreme fatigue. A selenium deficiency state can be evident as fatigue and impaired cognitive function, as well as thyroid dysfunction.

Mercury binds to a form of selenium called selenocysteine. It is the regular cysteine molecule, but the sulfur element has been replaced by selenium. The affinity of mercury for that molecule is 10 to the 45th power. Unfortunately, that is actually a million-fold higher affinity than for the glutathione that would normally bind to that molecule. Mercury can bind so tightly to selenoproteins that an adequate diet is not going to meet the body's demands.

It has been reported that seleno-protein P in the brain can bind a hundred molecules of mercury, like a natural sponge, just to keep mercury away from the developing neurons and astrocytes. Once mercury is present in those cells, they will not develop normally, due to disrupted DNA methylation.

Glutathione is Magnesium-Dependent

Glutathione protects the cells from oxidative-stress-induced apoptosis and glutathione levels are magnesium dependent. Glutathione is a very important detoxifying agent, enabling the body to get rid of undesirable toxins and pollutants. It forms a soluble compound with the toxin that can then be excreted through the urine or the gut. The liver and kidneys contain high levels of glutathione as they have the greatest exposure to toxins. The lungs are also rich in glutathione partly for the same reason. Many cancer-producing chemicals, heavy metals, drug metabolites etc. are disposed of in this way.

Glutathione (glū'tə-thī'ōn') is a polypeptide, $C_{10}H_{17}N_3O_6S$, of glycine, cysteine, and glutamic acid. Glutathione synthetase requires γ-glutamyl cysteine, glycine, ATP, and magnesium ions to form glutathione. In magnesium deficiency, the ss γ-glutamyltranspeptidase is lowered. There is a direct relationship between cellular magnesium, GSH/GSSG ratios, and tissue glucose metabolism.

Using Magnesium to Raise Oxygen-Carrying Capacity

The data shows that **magnesium-deficient people use more oxygen during physical activity**-their heart rates increased by about 10 beats per minute. "When the volunteers were low in magnesium, they needed more energy and more oxygen to do low-level activities than when they were in adequate-magnesium status," says physiologist Henry C. Lukaski.[cv]

Magnesium enhances the binding of oxygen to haem proteins.[cvi] There is probably some kind of magnesium pump where oxygen climbs aboard the red cells and magnesium jumps off only to have to jump right back on the red cells again. Red blood cells have a unique shape known as a biconcave disk, which is mission-critical for oxygen transport. Magnesium is important to red blood cell shape and function. The interaction of calcium, magnesium and ATP with membrane structural proteins exerts a significant role in the control of the shape of human red blood cells.[cvii]

Abnormal **magnesium-deprived red blood cells** lack the flexibility that allows them to enter tiny capillaries. These nondiscocytes are characterized by a variety of irregularities, including surface bumps or ridges, a cup or basin shape, and altered margins instead of the round shape found in discocytes. When people become ill or physically stressed (more magnesium-deficient), a higher percentage of discocytes transform into the less flexible nondiscocytes.

[civ] http://whnlive.com/fatigue/care/mechanism/

[cv] http://www.agclassroom.org/teen/ars_pdf/family/2004/05lack_energy.pdf

[cvi] Terwilliger and Brown, 1993; Takenhiko and Weber; Wood and Dalgleish, 1973

[cvii] http://bloodjournal.hematologylibrary.org/cgi/reprint/44/4/583.pdf

Dehydration and Hydrogen



Dehydration is one of the most overlooked and basic causes of disease.

When we think of hydration, we think of water. Oxygen and water are widely available but hydrogen is not freely available anywhere in Nature. Hydrogen is almost always 'bound' to other elements. When the body calls for water, it is hydrogen bonded to oxygen it wants. Most of the symptoms of disease and aging are, in one way or another, accompanied by hydrogen deficiency, which leads to oxidative stress as well as dehydration. **Hydrogen hydrates by turning the worst offending free radicals into water**.

To get the hydrogen needed, our bodies normally have the ability to remove hydrogen from food (hydrocarbons) and/or water but our bodies seem to lose some of that ability over time due to stress, environmental poisons, heavy metals, radiation exposure, pharmaceutical drugs, and due to compromised digestion from lack of hydrochloric acid in the stomach or intestinal flora compromised by antibiotics and junk food.

By increasing the amount of hydrogen we get every day we can relieve many symptoms, improve our level of energy and extend our lives, living longer with more health. One no longer needs to go completely to raw food for now we can get more hydrogen than anyone in history by simply enriching our water with hydrogen and breathing it using a hydrogen inhalation machine.

Sadly the majority of pediatric emergency medicine malpractice cases involve issues related to the lack of assessment and treatment of dehydration by pediatricians. Without food, most humans will die in a month. Without water, we're dead in less than 10 days. Water makes up over 70% of the body, around 90% of the blood, and about 85% of the brain. The problem with most of us is that we have been sold a bill of goods - when you're thirsty, drink a soda, or the latest "sports drink" (chock full of sugar, by the way). We drink coffee and sodas and beer and pasteurized milk and anything else we've been conditioned to buy, but most of us forget to drink enough water.

Some statistics show that as much as 90% of us are walking around in a chronic state of dehydration. One way to tell if you're dehydrated is to check the color of the urine. If it's dark all the time, you're probably dehydrated. The easiest way you can improve your health is to drink more high alkaline water, meaning pure water with plenty of minerals included.



Most of us do not drink enough water to remain fully hydrated and this leads to all kinds of health problems. Each day, the body loses up to five liters through the skin, lungs, gut and kidneys. In this process, water plays a major role in the elimination of toxic substances.

That water needs to be replaced. When the body burns glucose for energy, it makes about one-third of a liter of water a day as a by-product. More is contained in the foods we eat, particularly fruit and vegetables. In addition, we need to drink at least a liter a day, or ideally, 1.5 to two liters. If you do rigorous exercise, you may need more than this.

Water performs five vital bodily functions: it lubricates and cools; it transports things around the body; it is also a solvent and dispersant. Drinking plenty of water - which, of course, contains no calories - is also one of the best things to do if you want to lose weight.

The Beginning of Serious Medical Conditions

A two per cent loss in the water surrounding your body's cells results in a 20 per cent decrease in strength and energy levels. When energy is affected like this, the body's functioning is, in all ways, significantly reduced. If we want plenty of energy and want to prevent major diseases, our bodies must be properly hydrated. Dehydration leads the cells into a lower energy (voltage) situation. As metabolism drops so do cell and tissue temperatures.

When the blood becomes concentrated and acidic, as in dehydration, abrasions and tears are produced in the arterial system. L-lactic acidosis is thought to arise from poor tissue perfusion due to dehydration or endotoxemia with subsequent anaerobic glycolysis and decreased hepatic clearance of L-lactate. When the body begins to make more cholesterol, it does so for a good reason (a reason overlooked by allopathic medicine)-it is in part a reaction to chronic dehydration, a condition where the body is trying to fix these abrasions and tears that are produced in the arterial system. Cholesterol is actually saving the lives of people, because cholesterol is a bandage, a waterproof bandage designed by the body.[cviii]

> **Chronic pains of the body that cannot easily be explained as injury or infection, should first and foremost be interpreted as signals of chronic water shortage in the area where the pain is registered. These pain signals should first be considered and excluded as primary indicators for dehydration of the body before any other complicated procedures are forced on the patient.**
>
> **F. Batmanghelidj, M.D.**

The body manifests dehydration in the form of pain with the location of the pain being the point or points where dehydration is most settled. Tests consistently reveal that chronic pain patients suffer from chronic dehydration.[cix] A significant number of chronic pain patients also have a lower than normal venous blood plasma pH. [cx] A person with low venous plasma pH has what is termed acid blood. Acid blood is typically dark in color due to low oxygen content.

> Chronic, unintentional dehydration is the origin of most pain and degenerative diseases in the human body. The body manifests dehydration in as many ways as we, in medicine, have invented diseases. Dry mouth is not a sign of dehydration and waiting to get thirsty is wrong. Thirst should be prevented. When the body doesn't receive water and you have pain this is a sign of

> dehydration. The mouth is not dry. Pain in the body is a crisis call of the body for water. If you have heartburn, your body is telling you it's short of water in your gastrointestinal track. You've had a heavy meal, there wasn't enough water to liquefy and break down the food and get it absorbed and it gives you pain.
>
> F. Batmanghelidj, M.D.

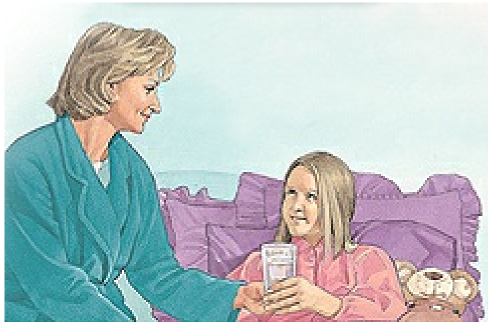
In animal studies blood pH did not differ significantly due to water deprivation; however, respiratory rate was significantly elevated, while blood partial pressure of CO_2, total CO_2 and bicarbonate were significantly reduced. The challenge in dehydration is a mild respiratory alkalosis induced by reduced blood CO_2, which may be the result of an accelerated respiratory rate.[cxi]

All functions within the body require the presence of water. A well-hydrated body enables these functions to occur quickly and efficiently. Dehydration happens when a person loses more fluids than he or she takes in. Large amounts of fluids can be lost through fever, diarrhea, vomiting, or sweating.

Dehydration happens very quickly in the bodies of infants and small children, who don't have as much fluid to spare. It can quickly become very serious. Risk of dehydration among children is higher than among adults and this process of dehydration may begin rapidly. Rehydration is the crucial process of returning those fluids back to the body to restore normal functioning. Dehydration in children can be a serious medical condition. Left untreated, it can have dire consequences. Since children aren't always aware or able to tell us if they're dehydrated, it falls to us as parents.

Water is one of the most important nutrients for children. Very often when we read the dietary advice for children, attention is not paid to the important facts concerning correct usage of water and other beverages. Children should always have unlimited access to pure, clean and high quality drinking water.

Dehydration has many causes but the most common is illness. When a child is vomiting or has diarrhea, they lose a lot of fluid. Fever contributes to fluid loss. For every degree in temperature above 100.4° F, your child loses 12.5 percent of body fluid. Decreased fluid intake due to a sore throat or mouth is another cause, as is inadequate fluid while active or in the heat. In rare cases, excessive urination due to conditions such as diabetes and kidney disease can cause dehydration in children.



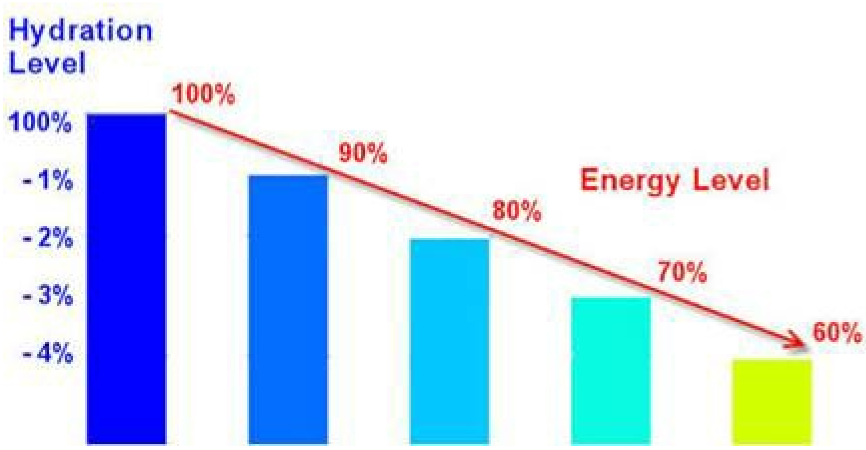
Dehydration is a fact of life for those who believe that beverages like coffee and sodas can substitute for pure drinking water. Eating and drinking the wrong foods will lead to dehydration. Foods such as fruits and vegetables are supposed to provide 20 percent of our water intake-junk foods do little to help us remain fully hydrated.[cxii]

Dr. Charles Peterson says dehydration is a problem among Americans suffering from other illnesses, such as diabetes, or those who undergo extreme exertion, but this is not really true. Anyone can suffer from dehydration and the facts are that most people suffer from mild dehydration at one time or another.

Dehydration triggers the release of histamines that start
a chain reaction of allergic reactions and health problems.

Under normal circumstances many of us flirt with mild dehydration over sustained periods. This is where things start to go wrong and doctors routinely make matters worse by not only failing to recognize dehydration but also by prescribing medicines that further depress water levels in the body and blood.

Shortness of breath is a common symptom of dehydration and so is low energy. When someone is dehydrated and experiencing these symptoms one merely has to drink several glasses of water to feel the body's almost instant response to hydration. Add some sodium bicarbonate and the response is even greater.



Courtesy of Brian D. Foltz

The first objective sign of dehydration is seen in the vital signs, in an increase of the pulse rate between 10 and 15 percent. The body tries to maintain cardiac output (the amount of blood that is pumped by the heart to the body); and if the amount of fluid in the intravascular space is decreased, the body has to increase the heart rate, which causes blood vessels to constrict to maintain blood pressure. Other common symptoms of dehydration may include nausea, fatigue, headaches, dry mouth and reduced mental acuity.

Symptoms of moderate to severe dehydration include:

· Low blood pressure

· Severe headache

· Fainting

· Severe muscle contractions in the arms, legs, stomach, and back

· Convulsions

· A bloated stomach

· Heart failure

· Sunken fontanel-soft spot on an infant's head

· Sunken dry eyes, with few or no tears

· Skin losing its firmness and becoming wrinkled

· Lack of elasticity of the skin (when a bit of skin lifted up stays folded and takes a long time to go back to its normal position)

· Rapid and deep breathing, faster than normal

· Fast, weak pulse

Dehydration, the simple lack of sufficient quantities of water affects cell life profoundly. Water shortages in different parts of the body will manifest different signs and symptoms (cries of thirst), but we normally do not think to treat the cause of the problem with water. It is almost blasphemy among contemporary physicians to think that water can cause or cure diseases.

Drinking enough water is crucial. When we don't drink enough, the first sign is darkening urine. The color of urine in a dehydrated person will be dark yellow to orange. The more hydrated we are the lighter the color of our urine. Any dark color at all in the urine could indicate a water deficiency.

Mild dehydration will slow down one's metabolism as much as three percent.[cxiii] One glass of water shut down midnight hunger pangs for almost 100 percent of the dieters studied in a University of Washington study. Lack of water is the number one trigger of daytime fatigue. Preliminary research indicates that 8-10 glasses of water a day could significantly ease back and joint pain for up to 80 percent of sufferers. Drinking five glasses of water daily decreases the risk of colon cancer by 45 percent and the risk of bladder cancer by 50 percent.

From the perspective of Dr. F. Batmanghelidj,[cxiv] the famous water doctor, most so-called incurable diseases are nothing but labels given to various stages of chronic dehydration. In my work *Natural Allopathic Medicine* water is the most primary medicine and before one embarks on more radical medical approaches, full hydration with the best water one can manage is a good idea. According to Batmanghelidj, water **can relieve a broad range of medical conditions.** By simply **adjusting our fluid and mineral intakes** we can treat and prevent dozens of diseases and avoid costly prescription drugs, surgery and other medical procedures and tests.

Dehydrated Cells



Cells are more vulnerable to chemical poisoning when in a dehydrated state. One overlooked factor in metabolic syndrome and inflammation is dehydration. When you do not drink enough water inflammation feels worse because it gets worse. Certainly dehydration is a contributing and complicating factor in diabetes.

When for any reason the body cannot deliver the necessary nutrients to the cells and carry away metabolic wastes, we set up the conditions for disease. Dehydration leads to damage from deterioration, because the transporting of nutrients and wastes is diminished and even cut off at strategic points in the body. **O**ne of the first protocols for a patient in the emergency room is an **intravenous saline solution**. Emergency room doctors are well aware that dehydration, second only to oxygen deprivation, is the fastest thief of life.

Protoplasm, the basic material of living cells, is made of fats, carbohydrates, proteins, salts, and similar elements combined with water. Water acts as a solvent, transporting, combining, and chemically breaking down these substances. A cell exchanges elements with the rest of the body by electrolysis. In a normal case, minerals and microelements pass through the cell membrane to the nucleus by electro-osmosis. The body needs electrolytes (minerals like sodium, potassium, chloride, and bicarbonate) for its basic functions.

Cells are made of water and live in a water solution. Our blood is mostly water. It serves to dissolve, process, and transport nutrients and eliminate waste. When dehydrated the blood becomes thick and saturated and is unable to flow freely. The excess of toxins must then be stored within the interstitial space surrounding the cells, pending elimination for life to continue. Over time this space begins to resemble a toxic waste site-an acidic medium. Since cells do not have proper oxygenation and nutrition, they begin to change in form and function in order to survive.

Painful joints are often a signal of water shortage, thus the use of painkillers does not cure the problem but instead exposes the person to further damage from these pain medications. Intake of water and small amounts of mineral salts will address this problem especially if that mineral is magnesium.

Dr. Norman Shealy says, "Every known illness is associated with a magnesium deficiency" and that, "magnesium is the most critical mineral required for electrical stability of every cell in the body. A magnesium deficiency may be responsible for more diseases than any other nutrient." **The benefits of drinking water are amplified immensely with water high in magnesium and bicarbonates.**



Like water we need magnesium every day. When magnesium is present in water, life and health are enhanced. One of the main benefits of drinking plenty of magnesium-rich water is to **prevent heart disease and stroke even in children. Full** hydration is essential to help prevent clogging of arteries in the heart and brain. When water is rich in magnesium, it becomes the primary treatment for hypertension. Full hydration with water and magnesium is crucial in treating high blood pressure without using diuretics or other pharmaceutical medications.

Climate can drastically change how much water you need. On hot days that require you to be outside, you should drink more water to counteract the fluids you lose when you sweat. This not only keeps your body hydrated, it can prevent heat-related illness. Just as important (but often overlooked) is consuming enough fluids in cold and wet conditions. The human body works much more efficiently (including heating and cooling) when properly hydrated. Inadequate water intake affects the brain's function first. This can be very dangerous (especially in extreme conditions).

It is not easy to increase one's water intake. It is a decision that entails a commitment because most of us by habit drink too little and are not in touch with the thirst mechanism in our body. If we want to properly hydrate the body we also have to cut down on non-water fluids like coffee, alcohol and carbonated drinks.

Some people advise not drinking any water for a few hours before bedtime so as to assure more prolonged and necessary sleep patterns; people with weak bladders have a problem drinking an hour before bed. Also, many people's bodies do not absorb the water they drink due to the fact that it is devoid of minerals. Thus they have interrupted sleep due to having to get up to urinate at least once or twice during the night.

Sleep is almost as important to health as water so if you have trouble sleeping because of the need to urinate during the night or early morning it is best to fully hydrate during the morning, afternoon and early evening hours. When people become very ill, historically there are two things they stop doing. They stop sleeping well, and they stop drinking enough good-quality water.

Dr. Batmanghelidj says, "The human body can become dehydrated even when abundant water is readily available. Humans seem to lose their thirst sensation and the critical perception of needing water. Not recognizing their water need, they become gradually, increasingly, and chronically dehydrated as they age. Further confusion lies in the idea that when we're thirsty, we can substitute tea, coffee, or alcohol-containing beverages. This is a common error."



So how do you know if you are dehydrated? It's actually the easiest thing to diagnose. Just monitor your urine color. If it's too yellow you are dehydrated. To experience full hydration, drink enough water until your urine runs clear. Keeping that level of hydration is not easy but it is good to know where that full hydration mark is.

Dr. Batmanghelidj's website www.watercure.com is where you can find the best information about water and its use as a medicine. The good doctor gave us 13 symptoms that should inspire all of us to drink more water:

1. **Fatigue, energy loss:** Dehydration of the tissues causes enzymatic activity to slow down.

2. **Constipation**: When chewed food enters the colon, it contains too much liquid to allow stools to form properly, and the wall of the colon reduces it. In chronic dehydration, the colon takes too much water to give to other parts of the body.

3. **Digestive disorders**: In chronic dehydration, the secretion of digestive juices is less.

4. **High and low blood pressure**: The body's blood volume is not enough to completely fill the entire set of arteries, veins, and capillaries.

5. **Gastritis, stomach ulcers:** To protect its mucous membranes from being destroyed by the acidic digestive fluid it produces, the stomach secretes a layer of mucus.

6. **Respiratory troubles:** The mucous membranes of the respiratory region are slightly moist to protect the respiratory tract from substances that might be present in inhaled air.

7. **Acid-alkaline imbalance:** Dehydration activates an enzymatic slowdown producing acidification.

8. **Excess weight, obesity:** We may overeat because we crave foods rich in water. Thirst is often confused with hunger.

9. **Eczema:** Your body needs enough moisture to sweat 20-24 ounces of water, the amount necessary to dilute toxins so they do not irritate the skin.

10. **Cholesterol**: When dehydration causes too much liquid to be removed from inside the cells, the body tries to stop this loss by producing more cholesterol.

11. **Cystitis, urinary infections:** If toxins contained in urine are insufficiently diluted, they attack the urinary mucous membranes.

12. **Rheumatism:** Dehydration abnormally increases the concentration of toxins in the blood and cellular fluids, and the pains increase in proportion to the concentration of the toxins.

13. **Premature aging:** The body of a newborn child is composed of 80% liquid, but this percentage declines to no more than 70% in an adult and continues to decline with age.

Hydration & Stress

Limiting the consumption of caffeinated beverages, sugary drinks and alcohol is a good place to start when dealing with dehydration. All these liquids contribute to dehydration because it takes the body even more water to process and neutralize strong acids or high sugar content.

"Studies have shown that being just half a liter dehydrated can increase your cortisol levels," says Amanda Carlson, director of performance nutrition at Athletes' Performance, a trainer of world-class athletes. "Cortisol is one of those stress hormones. Staying in a good hydrated status can keep your stress levels down. When you don't give your body the fluids it needs, you're putting stress on it, and it's going to respond to that," Carlson said.

Dr. Lawrence Wilson says, "An excellent idea is to drink about a quart of water upon arising and at least half an hour before breakfast. This will usually provoke a bowel movement and gets the day off to a good start. When you wake up, just sit and drink a quart of water. Do it in your near infrared sauna, ideally, or even better, while the sauna is heating up. You may feel a little like you are floating away, and you will urinate more than usual until it has passed from your system, but it is often the best way to make sure you drink enough water all day."

Wilson insists that the best time to drink a lot of water is when you first wake up. "Adults, preferably drink about 1 quart or 1 liter of water upon arising. Then wait at least half an hour to 45 minutes before eating breakfast. This is ideal. Do your best with this. You will still need to drink during the day, but you will have a good start on drinking 3 quarts or 3 liters of water each day. The only problem with drinking in the morning before breakfast is you will need to urinate a few times in the early morning, which is difficult for some people who commute," he concludes.

Dehydration, Inflammation & Cancer

Many doctors cannot readily differentiate between water-deficient causes of illness and other potential causes. This often leads to poor case management and further deterioration of patients' conditions. If cancer is linked to inflammation, and inflammation is linked to dehydration then one should be very frightened for our children. More than 70% of preschool children never drink plain water.

Dehydration isn't just about low water, but also insufficient electrolytes. Without a good balance of water and electrolytes in the system it is difficult for blood, and thus oxygen to reach all parts of the body. Because water and electrolytes are so crucial to the functioning of every cell in our bodies, their lack creates all kinds of problems. Magnesium deficiencies go hand in hand with dehydration and it is one of the prime reasons I recommend magnesium bicarbonate water.

Diabetes tends to cause dehydration, because people with diabetes have a very high glucose rate. The body wants to get rid of the glucose and makes you urinate much more frequently than normal, your kidneys produce urine and expel it frequently. This leads to dehydration. Interestingly one of the main causes of diabetes is magnesium deficiency; and both magnesium deficiency and diabetes are precursors to cancer.

Inflammation is cytotoxic; it can kill cells prematurely. Cellular death is a major contributor to the chronic medical conditions previously mentioned. One of the signaling mechanisms that initiates inflammation in the body is histamine. Histamine increases the permeability of blood vessels to white blood cells and proteins. Histamine increases immune activity. **Dehydration has been shown to increase production of histamine leading to a general, widespread inflammatory response**.[cxv] By ensuring proper hydration of the body we can prevent dehydration and reduce this over production of histamine and hence inflammation.

Dehydration, which can lead to cancer formation (of any type) includes the following consequences to our physiology: 1) **DNA damage**,which can lead to mutant (cancerous) cells. 2) **Acid-alkaline balance.** When dehydrated, and urine output is diminished, acid waste accumulates in weak or vulnerable areas of the body. It is well known that a cancerous body is acidic. 3) **Cell receptor damage.** Chronic dehydration causes enzymatic changes that lead to numerous problems with cellular communication and hormonal balance. 4) **Immune system suppression.** Dehydration suppresses the immune system because histamine production in the body is increased, which also increases the production of a chemical called vasopressin, a strong suppressor of the immune system.

Dr. Fereydoon Batmanghelidj, states, "Unintentional chronic dehydration (UCD) contributes to and even produces pain and many degenerative diseases that can be prevented and treated by increasing water intake on a regular basis." His list includes fibromyalgia, arthritis, back pain and cancer. In fact Batmanghelidj has good reason to suspect that dehydration and the inflammation that comes from it is the most basic cause of all disease.

Oxygen link between Dehydration & Cancer

Water is the primary transport of oxygen to the cells! Water is also the primary transport for the removal of toxins out of the cells and out of the body, so we can readily understand that dehydration quickly leads to pathology, and eventually to cancer, as cells switch from normal oxygen respiration to fermentation.

Lack of oxygenation and toxin accumulation also make the body much more vulnerable to systemic proliferation of microbes, such as certain bacteria, viruses, and fungi that are associated with cancer. Hydration in the body is important for transporting carbohydrates, vitamins, minerals and other important nutrients and of course oxygen to the cells.

Most doctors will say that under no circumstances can dehydration cause cancer; but when we look carefully, we see that in fact a **long-term chronic shortage of water creates exactly the inflammation conditions that eventually lead to cancers**. Water shortages create oxygen shortages as well as acid pH, so water is a serious medicine. It cures dehydration, which is a serious plague-like, and officially recognized, medical problem. Water is the most basic perfect medicine and, when taken in a pure mineralized form, will help one return to health and more readily recover from cancer.

Sip water regularly throughout the day to avoid dehydration. Remember, thirst and a dry mouth are some of the last signs that the body is in need of water, not the first. Most people are unconscious of their thirst mechanisms. One of the reasons is that we take liquid substitutes that drive down hydration levels instead of raising them. Coffee dehydrates us, as do all soda drinks. It really is an effort, but one well made, to drink enough medical quality water. This is defined as purified water laden with appropriate minerals like magnesium and bicarbonate.

Most people today continue to repeat the widely off-base mantra that cancer is a genetic disease caused by DNA damage. They think that DNA damage can happen randomly (which is most often their culprit) or through exposure to DNA damaging agents (i.e. things called "carcinogens"). Cancers, it turns out, actually arise from sites of chronic irritation, infection and inflammation. **In most cancers the cancer cells themselves initiate an inflammatory process that enables them to proliferate madly**. "It's like wild fire out of control," says Dr. William Li.

In 2008 researchers in France found that one in six cancers are caused by treatable infections. Helicobacter pylori, hepatitis B and C viruses, and human papillomaviruses

were responsible for 1.9 million cases, mainly gastric, liver, and cervix uteri cancers. In women, cervix uteri cancer accounted for about half of the infection-related burden of cancer; in men, liver and gastric cancers accounted for more than 80%. Around 30% of infection-attributable cases occur in people younger than 50.[cxvi]

"It is believed that cancer is caused by an accumulation of mutations in cells of the body," says Dr. Carlo M. Croce, professor and chair of molecular virology, immunology and medical genetics. "Our study[cxvii] suggests that miR-155, which is associated with **inflammation, increases the mutation rate** and might be a key player in inflammation-induced cancers generally."

[cviii] "Bad Cholesterol": A Myth and a Fraud;F. Batmanghelidj, M.D.; http://www.watercure.com/sci_myth.html

[cix] http://foodmatters.tv/articles-1/are-you-chronically-dehydrated

[cx] New hypothesis of chronic back pain: low pH promotes nerve ingrowth into damaged intervertebral disks C. LIANG et al;Acta Anaesthesiologica ScandinavicaArticle first published online: 7 MAR 2012; http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1399-6576

[cxi] http://scialert.net/abstract/?doi=ajava.2012.420.426

[cxii] iceberg lettuce 96%

squash, cooked. 90%

cantaloupe, raw, 90%

2% milk 89%

apple, raw 86%

cottage cheese 76%

potato, baked 75%

macaroni, cooked 66%

turkey, roasted 62%

steak, cooked 50%

cheese, cheddar 37%

bread, white 36%

peanuts, dry roasted 2%

[cxiii]http://www.diagnose-me.com/cond/C5223.html

[cxiv]http://www.watercure.com/

[cxv] Kjaer A, Knigge U, Jørgensen H, Warberg J., "Dehydration-induced vasopressin secretion in humans: involvement of the histaminergic system." Am J Physiol Endocrinol Metab., 279.6 (2000):E1305-10.

[cxvi] *The Lancet Oncology*, news release, May 8, 2012

[cxvii] E. Tili, J.-J. Michaille, D. Wernicke, H. Alder, S. Costinean, S. Volinia, C. M. Croce. **Mutator activity induced by microRNA-155 (miR-155) links inflammation and cancer**. *Proceedings of the National Academy of Sciences*, 2011; 108 (12): 4908 DOI: 10.1073/pnas.1101795108

Fastest Way to Win the War on Cancer -

Water (Hydrogen) Fast



When reading this chapter remember that water is mostly hydrogen. Also remember that deep sea divers breathe mostly hydrogen. Flooding a body under stress with hydrogen makes good medical sense, whether from drinking plenty of hydrogen oxygenated water, inhaling hydrogen gas, and to get really radical, from disciplining oneself to drink just water for a few days.

Few of us are into fasting and even fewer of us appreciate the healing power of water. However, it behooves us to understand, to have a reference point to what is possible if we really bring our will into play when attempting to heal ourselves from cancer. Fasting might be a good idea but it is not the way for late stage cancer patients who are already being eaten away by their cancer. For them a modified fast, a spirulina or liquid seed fast might be what is indicated. What makes much more sense for these patients is to flood the body with hydrogen gas. Around the clock if necessary for end stage cancer.

To wrap one's mind around a simple medical healing process like a water fast and how devastating that can be to cancer cells one has first to confront one's laziness with even the idea of not eating. When one goes on a water fast one slams a fist right into the gut of cancer cells by starving them of glucose; so we have to be tough and apply strength of will to our fasting. Will by the way is something of the heart. Whatever we love to do, we have plenty of will for.

Cancer cells differ from healthy cells in the way they create energy. In cancer cells, damaged mitochondria and low oxygen conditions force cells to use fermentation to get their energy. This means they are completely hooked on high levels of glucose. This glucose comes mainly from carbohydrates. If you starve your body of glucose, you effectively starve cancer cells to death.

Dr. Philipp Mergenthaler and Dr. Andreas Meisel showed that depriving a cell of glucose, while giving it plenty of oxygen at the same time, blocks glycolysis. It thereby forces the cell to revive its mitochondria and use the Krebs cycle for energy, or just die.

In 2008 a group led by Dr. Valter Longo, a biologist at the University of Southern California (USC), published a paper suggesting that a short, sharp course of fasting-not eating at all for a few days as opposed to months of eating much less than normal-could make ordinary, non-cancerous cells more resistant to the side-effects of chemotherapy, at least in yeast and mice. He also asserts that fasting will strengthen the immune system and help unleash its power on cancer cells.

Dr. Longo asserts that fasting can actually make cancerous cells more susceptible to chemotherapy than they otherwise might be. Cancerous mice treated with a combination of chemotherapy and fasting had better survival chances and smaller tumors, for several different types of cancer, than those treated with either fasting or chemotherapy alone. In some cases, the combination treatment eradicated even metastasized cancers completely.

An increasing number of medical scientists know that the most logical, effective, safe, necessary and inexpensive way to treat cancer is to cut off the supply of food to tumors and cancer cells, starving them with a lack of glucose. The therapeutic strategy for selective starvation of tumors by dietary modification is one of the principle forms of therapy necessary for cancer patients to win their war on cancer.

Researchers at Huntsman Cancer Institute in Utah were one of the first to discover that sugar "feeds" tumors. The research published in the journal *Proceedings of the National Academy of Sciences* said, "It's been known since 1923 that tumor cells use a lot more glucose than normal cells. Our research helps show how this process takes place, and how it might be stopped to control tumor growth," says Don Ayer, Ph.D., a professor in the Department of Oncological Sciences at the University of Utah.

Dr. Thomas Graeber, a professor of molecular and medical pharmacology, has investigated how the metabolism of glucose affects the biochemical signals present in cancer cells. In research published June 26, 2012 in the journal *Molecular Systems*

Biology, Graeber and his colleagues demonstrate that **glucose starvation-that is, depriving cancer cells of glucose-activates a metabolic and signaling amplification loop that leads to cancer cell death** as a result of the toxic accumulation of reactive oxygen species (ROS).[cxviii]

Depriving your body of calories effectively treats cancer and nothing will do that better than a water fast. Normal cells respond to fasting by going into survival mode. They slow down, conserve resources and go into healing and regeneration mode.

Cancer cells on the other hand plow full steam ahead which leaves them vulnerable. When denied food, they do not have the ability to slow down their metabolism until food becomes available again. They need a constant flood of glucose - i.e. blood sugar, which is the product of metabolizing carbohydrates. Without their favorite growth food, tumor growth slows and cancer cells die.

The ketogenic (no-carb) diet, the Gerson diet, and the macrobiotic diet all work because they practically starve you of carbohydrates. Many decades ago The American Cancer Society said, "Cancer is not caused or cured by any known diet." Nothing has changed in all these years meaning oncologists are working with their patients with blinders on. The American Diabetes Association maintains a similar position with diabetes yet what we eat and refrain from eating is incredibly important to life and health.

Many studies on diet and cancer prove the connection between a no-carbohydrate diet and dramatically reduced cancer growth rates. Add fasting to whatever else you are doing, and you starve cancer cells even faster.

Fasting can heal many common diseases, because it allows the body to rest, detoxify, and concentrate all its energy on healing instead of digestion. Fasting can be as recharging for the organism as sleeping. During a longer fast, the body reaches out for all degenerative and foreign tissues in the body like fibroid tumors, moles, bacteria, viruses and any other sick and unnecessary tissues.

Precautions: I am not making a universal prescription of water fasts for all cancer patients at all stages of the cancer process. Generally, up to 3 day fasting should be safe for most people, but I recommend starting slowly - first skipping just one meal, then one day of fasting per week and only then go to 3 day fasting. If you have any doubts about fasting or wish to fast longer, please consult with your health practitioner. If your doctor is totally against fasting, you can find naturopathic doctors or other alternative practitioners.

Choose the type of fast that works best for you. If you are going through chemotherapy,

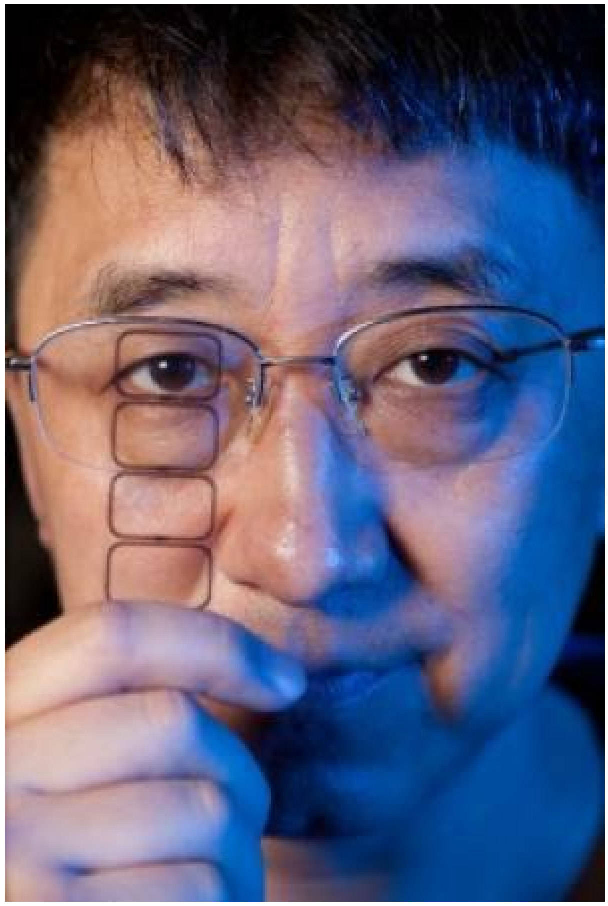
remember that fasting not only makes your chemotherapy more effective, it can also reduce your side effects. Better yet, choose a natural form of chemotherapy, like hemp oil, and blast your healthy cells and the cancer cells both with waves of oxygen and alkalinity. There is not a cancer cell alive that will enjoy increases in oxygen and alkalinity, but healthy cells will rejoice.

If you are eating a Western Diet/Standard American Diet, rich in meat, dairy, refined sugar, salt, oils, and processed junk foods, you are putting toxins in your body faster than it can eliminate them. Over time, these toxins accumulate until there is a tipping point where your body is so overloaded that essential systems and functions begin to break down. This accumulation of toxins from an unhealthy diet and our environment are major contributors to chronic disease including cancer.

Fasting on water is not generally recommended for late stage cancer when a patient is already suffering from glucose deficiency. Cancer eventually eats it all, leaving a person to starve.

[cxviii] Nicholas A Graham, Martik Tahmasian, Bitika Kohli, Evangelia Komisopoulou, Maggie Zhu, Igor Vivanco, Michael A Teitell, Hong Wu, Antoni Ribas, Roger S Lo, Ingo K Mellinghoff, Paul S Mischel, Thomas G Graeber. **Glucose deprivation activates a metabolic and signaling amplification loop leading to cell death**. *Molecular Systems Biology*, 2012; 8 DOI: 10.1038/msb.2012.20

The Key Drivers of Cancer Growth Are?



Scientists have recently confirmed, yet again, that **long-term lack of oxygen in cells is the key driver of cancer growth**. Who says so now? Dr. Ying Xu, Regents-Georgia Research Alliance Eminent Scholar and professor of bioinformatics and computational biology in the Franklin College of Arts and Sciences.

His study was published in the *Journal of Molecular Cell Biology* in 2012. "Cancer drugs try to get to the root-at the molecular level-of a particular mutation, but the cancer often bypasses it," Xu said. "So we think that possibly **genetic mutations may not be the main driver of cancer**."[cxix]

Every doctor learned back in medical school all about Dr. Otto Warburg's discovery in the 1930s when he discovered the main biochemical cause of cancer, or what differentiates a cancer cell from a normal, healthy cell. So big a discovery was this that Dr. Warburg was awarded the Nobel Prize.

Dr. Warburg said, "Cancer, above all other diseases, has countless secondary causes. Almost anything can cause cancer. But, even **for cancer, there is only one prime cause**. The prime cause of cancer is the replacement of the respiration of oxygen (oxidation of sugar) in normal body cells by fermentation of sugar... In every case, during the cancer development, the oxygen respiration always falls, fermentation appears, and the highly differentiated cells are transformed into fermenting anaerobes, which have lost all their body functions and retain only the now useless property of growth and replication."

Cancer has a primary characteristic by which it can be measured. "It is the replacement of normal oxygen respiration of the body's cells by an anaerobic [i.e., oxygen-deficient] cell respiration," said Warburg. This tells us that cancer metabolizes much differently than normal cells. Normal cells need oxygen. Cancer cells despise oxygen. Another thing this tells us is that cancer metabolizes through a process of fermentation.



The metabolism of cancer is approximately eight times greater than the metabolism of normal cells (that's why they love sugar so much) but Warburg forgot to tell the world-not only are the oxygen levels low but so are carbon dioxide (CO_2) levels. And he did not tell a soul that by breathing too fast (as most people do) they are getting rid of too much CO_2 and that is what is driving down the oxygen levels to the point that cells turn cancerous.

When we do not address this key driver it does not matter what we do-cancer will come back and kill us.

Otto Warburg was telling us that the cellular metabolism of cancer cells matches closely those of yeast or mold or fungus-that is, the cells ferment sugar/glucose/dextrose rather than oxidize it via the cellular mitochondria. So it follows logically that the same medical

approach that successfully targets cancer would do the same for these yeasts, molds and fungus.

Warburg had only part of the story and no one has written the finishing chapter so that we can finally come to rest with a full understanding and appreciation for what we are facing when cancer knocks on our door.

Dr. Lesley Walker, Cancer Research UK's director of cancer information, said, "For a long time scientists have been looking for ways to boost the oxygen supply to tumors to improve response to treatment." He was referring to treatment with radiation, but this would apply very much to a whole range of natural treatments.

If lack of oxygen is a key driver of cancer growth then so is low CO_2, pH and depressed cell voltage.

It's known that low oxygen levels in tumors can be used to predict cancer recurrence in men with intermediate-risk prostate cancer even before they receive radiation therapy, so why don't doctors use methods of raising oxygen in their treatment against cancer?

"We've not only shown that **men do worse if they have low oxygen levels (hypoxia) in their prostate cancer**, but that they also do worse over a shorter period of time," says Dr. Michael Milosevic, radiation oncologist in the PMH Cancer Program, UHN. "These patients seem to develop cancer recurrence within only a few years of completing treatment."

Dr. Milosevic and colleagues measured oxygen levels in 247 men with localized prostate cancer prior to radiation therapy and followed them for a median of 6.6 years. **Low oxygen in the tumors predicted early relapse after radiation treatment.** It was also the only identified factor that predicted local recurrence during follow-up.[cxx]

Luckily we do not need new drugs to target hypoxia in tumors. Sodium and potassium bicarbonate do the job nicely for less than the least expensive pharmaceutical in the world. And if we add breathing retraining to slow down our rate of breathing we can drop oxygen as well as CO_2 and pH bunker bombs on cancer tumors 24 hours a day, seven days a week with very little cost. This is the kind of medicine pharmaceutical executives should greatly fear.

Dr. Rockwell from Yale University School of Medicine (USA) studied malignant changes on the cellular level and wrote, "The physiological effects of hypoxia and the associated micro environmental inadequacies increase mutation rates, select for cells deficient in normal pathways of programmed cell death, and contribute to the development of an

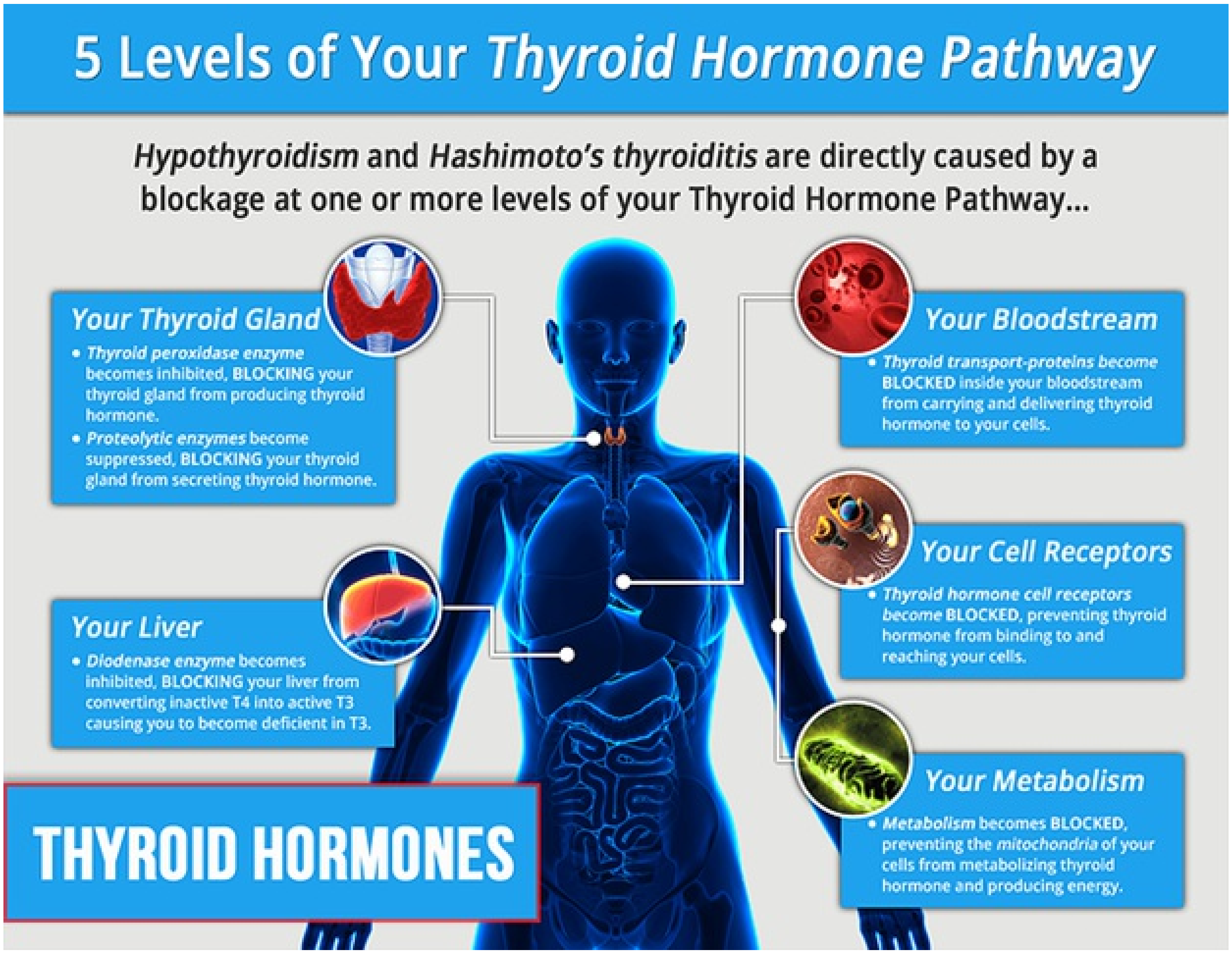
increasingly invasive, metastatic phenotype"[cxxi]

[cxix] J. Cui, X. Mao, V. Olman, P. J. Hastings, Y. Xu. **Hypoxia and miscoupling between reduced energy efficiency and signaling to cell proliferation drive cancer to grow increasingly faster**. *Journal of Molecular Cell Biology*, 2012; DOI: 10.1093/jmcb/mjs017

[cxx] M. Milosevic, P. Warde, C. Menard, P. Chung, A. Toi, A. Ishkanian, M. McLean, M. Pintilie, J. Sykes, M. Gospodarowicz, C. Catton, R. P. Hill, R. Bristow. **Tumor Hypoxia Predicts Biochemical Failure following Radiotherapy for Clinically Localized Prostate Cancer**. *Clinical Cancer Research*, 2012; 18 (7): 2108 DOI: 10.1158/1078-0432.CCR-11-2711

[cxxi] Rockwell S, Oxygen delivery: implications for the biology and therapy of solid tumors, Oncology Research 1997; 9(6-7): p. 383-390.

Iodine, Metabolism and Oxygen



Though doctors and people do not normally associate iodine with oxygen, we have to see that iodine-carrying thyroid hormones are essential for oxygen-based metabolism. First increases of iodine and thyroid hormones increase red blood cell mass and increase the oxygen disassociation from hemoglobin.[cxxii] Thyroid hormones have a significant influence on erythropoiesis, which is the process that produces red blood cells (erythrocytes).

The most common thyroid dysfunctions, hypothyroidism and hyperthyroidism affect blood cells and cause anemia with different severity. Thyroid dysfunction and iodine deficiency induces other effects on blood cells such as erythrocytosis, leukopenia, thrombocytopenia, and in rare cases causes' pancytopenia. It also alters RBC indices including MCV, MCH, MCHC and RDW.

Thyroid hormones increase oxygen consumption. They also increase mitochondrial size, number and key mitochondrial enzymes. This means iodine increases plasma membrane Na-K ATPase activity, increases futile thermogenic energy cycles and decreases superoxide dismutase activity.

Mitochondria, by virtue of their biochemical functions, are a natural direct target for the calorigenic effects of thyroid hormones. Going further, we can see that mitochondria are highly dependent on thyroid hormones (thus iodine) for their very existence. Thyroid hormones are like the "signal" to make more mitochondria. Thyroid hormone (T3) has a profound effect on mitochondrial biogenesis; without T3 there will be less or no mitochondria. On the other hand, if mitochondria are damaged or depleted due to some reason other than too little T3, then existing T3 has "nothing to act on." You can have all the T3 in the world, but without mitochondria, there will not be any energy. Again, you can see the the occurrence of a circular downward spiral of both host cell and mitochondria if either 1) too little or no T3 exists, or 2) too little or no mitochondria exist.

Summing it up we see that the total number of mitochondria in cells, and thus the total number of rechargeable ATP/ADP batteries, is dictated by the amount of functional thyroid hormone present in cells. If normal levels of thyroid hormone are reduced, the body develops hypothyroidism and the number of mitochondria in individual's cells is restricted. Hypothyroidism is a very common condition implicated in what is called metabolic syndrome (formerly known as syndrome X).

What is the basic cause of hypothyroidism? Iodine deficiency! Without iodine, the thyroid gland is unable to produce sufficient amounts of thyroid hormone. This leaves cells unable to function normally. In response, the body develops hypothyroidism.

Metabolism

Metabolism is defined as "taking food and converting it to energy." Our bodies need oxygen on a moment to moment basis. The higher the metabolism the more oxygen is needed. Cells begin to rapidly deteriorate without an adequate supply of oxygen or when metabolism, due to iodine deficiencies, goes south. Efficiency of oxygen conversion into cellular energy is a key to the use of energy; therefore oxygen has, in effect, its own metabolism. The necessity for oxygen makes it the body's most important nutrient.

Nutrients that are commonly used by animal and plant cells in respiration include sugar, amino acids and fatty acids. The most common oxidizing agent (electron acceptor) is molecular oxygen (O2). Note that the amount of energy produced for the four types of food is roughly proportional to the amount of oxygen use, so that the metabolic rate can

be measured by measuring the rate of oxygen consumption. Almost every process in the body that uses energy gets it from ATP, and in the process converts it to ADP.

The thyroid gland is like a building thermostat sending a message to a furnace to produce heat. Unlike a thermostat, the thyroid does not send its message to a single furnace. Instead, it sends the message to zillions of mitochondria via the chemical thyroxin that they should burn more fuel to create more biochemical energy.

In order for the thyroid to send this "make more energy" message, the body needs ample amounts of iodine. There must be four atoms of iodine in each molecule of thyroxin (T4), the chemical that transmits the message to the mitochondria. Unfortunately, many people are deficient in iodine (because it is not in their food) with the result that the "make more energy" command is not communicated from the thyroid to the mitochondria. The consequence of this is low energy, low production of endorphins, and fat gain (because food energy is not converted to energy, but is instead stored as fat).

Oxygen levels are sensitive to a myriad of influences. Toxicity, emotional stress, physical trauma, infections, reduction of atmospheric oxygen, nutritional status, lack of exercise and especially improper breathing will affect the oxygen levels in our bodies. Now let's see how important iodine and thyroid hormones are in this process as well.

Crucial Iodine

We can begin to see how iodine is important in cancer treatment, not only because it provokes cell apoptosis and kills viruses, bacteria and fungus on contact (infections cause as much as 40 percent of cancers) but also because iodine is crucial in metabolism and oxygen delivery to the cells. Any element that threatens the oxygen carrying capacity of the human body will promote cancer growth. Likewise, any therapy that improves the oxygen function can be expected to enhance the body's defenses against cancer. In order for cancer to 'establish' a foothold in the body, it has to be deprived of oxygen. If these two conditions can be reversed cancer can not only be slowed down, it can actually be upended.

Oxygen, pH and Iodine

Dr. David Brownstein indicates that iodine is alkaline and the body uses iodine to recover from an acid state. One's body pH value tells you how acidic or alkaline the body is relative to a neutral 7.0. Balanced body pH is essential for a healthy body and is a major line of defense against sickness and disease. Most people do not know that pH is also a

measure of oxygen and cell voltage. The more alkaline, the more oxygen and the higher the cell voltage.

To maintain a balanced pH, your body pulls certain minerals, such as sodium, potassium, calcium and magnesium, from its' tissues to neutralize acids in the blood. Iodine/iodide appears to be essential to this process because it is both the key to metabolism and important to oxygen levels. If your body cannot do this successfully because you are deficient in the iodine (and thus low on energy) necessary for this process to occur, acids accumulate in the body and cause health problems over time. The longer your pH remains below normal in the acid range and the deficiency is not corrected, the higher your risk that symptoms of various ailments will occur and increase in severity.

The most important factor in creating proper pH is increasing oxygen. No wastes or toxins can leave the body without first combining with oxygen. The more alkaline you are, the more oxygen your fluids can hold and keep. Oxygen also buffers/oxidizes metabolic waste acids, helping to keep you more alkaline. Iodine sufficiency is one crucial key to oxygen sufficiency.

> According to Annelie Pompe, a prominent mountaineer and world-champion free diver, alkaline tissues can hold up to 20 times more oxygen than acidic ones. When our body cells and tissues are acidic (below pH of 6.5-7.0), they lose their ability to exchange oxygen. Increased carbon dioxide, bicarbonates and electrons lead to increased oxygen.

The quickest way to increase oxygen and pH is through the administration of sodium bicarbonate and that is why bicarbonate has always been a mainstay emergency room and intensive care medicine. Of course, when we increase oxygen and pH levels we are simultaneously increasing cellular voltage.

We can violently pull the rug out from under most pathogens by bombarding them with a blast of alkalinity. This is the same thing as blasting with oxygen when we take high dosages of iodine, along with supplying our immune system with plenty of magnesium, selenium and sulfur.

Oxygen is the Source of Health

Improving oxygen intake, uptake, and assimilation is critical to the body's energy and as an inhibitor to disease and decay. Movement and exercise invites a need for more oxygen. To digest and assimilate food uses up oxygen. Every bodily function uses up oxygen in varying degrees.

Dr. D. Treacher and Dr. R. Leach write, "Mammalian life and the bioenergetic processes that maintain cellular integrity depend on a continuous supply of oxygen to sustain aerobic metabolism. Reduced oxygen delivery and failure of cellular use of oxygen occur in various circumstances and if not recognized result in organ dysfunction and death. Prevention, early identification, and correction of tissue hypoxia are essential skills. An understanding of the key steps in oxygen transport within the body is essential to avoid tissue hypoxia. Although oxygen is the substrate that cells use in the greatest quantity and on which aerobic metabolism and cell integrity depend, the tissues have no storage system for oxygen. They rely on a continuous supply at a rate that precisely matches changing metabolic requirements. If this supply fails, even for a few minutes, tissue hypoxaemia may develop resulting in anaerobic metabolism and production of lactate."

Hypoxemia or what might be called "blocked oxidation," is followed by fermentation of sugar in cells, which then leads to the primary condition upon which cancer, infectious and inflammatory processes feed. Viruses are "anaerobic" creatures, which thrive in the absence of oxygen. Yeast, mold and fungus live in an anaerobic environment. Most strains of harmful bacteria (and cancer cells) are anaerobic and are not comfortable in the presence of higher oxygen levels, so doctors will find cancer cells easier to kill when oxygen levels are increased.

[cxxii] Ann Intern Med. 1971; 74 (4):632-633.

Secrets of Water and Hydrogen



The most basic secrets of water can be seen when we reduce water to its parts-hydrogen and oxygen. These atoms everything for life. Hydrogen and oxygen are the two most common atoms; they are the most basic building blocks and as such are extremely useful in medicine.

When we talk about water, in great part we are talking about hydrogen. Obviously hydrogen cannot be separated from water because water is not water without hydrogen. However, the bond angles of hydrogen's intersection with oxygen can be increased with some amazing anticancer effects.

The more intensely one deals with the topic of water, the more mysterious and puzzling it seems. Despite 200 years of water research science has not managed to completely understand this ever-present element. Philip Ball, long-time editor of "Science", a reputable scientific magazine, explained in 2008, "It's embarrassing to admit it, but the stuff that covers two-thirds of our planet is still a mystery. A research team from the University of Washington was able to uncover one of the secrets of water: The team, led

by Dr. Gerald Pollack, discovered a fourth physical state of water:

Water is a mysterious element even from a scientific perspective. The official theory about water is full of holes, the so-called anomalies, which cannot be satisfactorily explained with the conventional theory. Freezing point, boiling point, density, surface tension - even with these basic things water acts differently in comparison to how theory would expect it to act.

https://www.youtube.com/watch?v=QBGfmmwXpdY

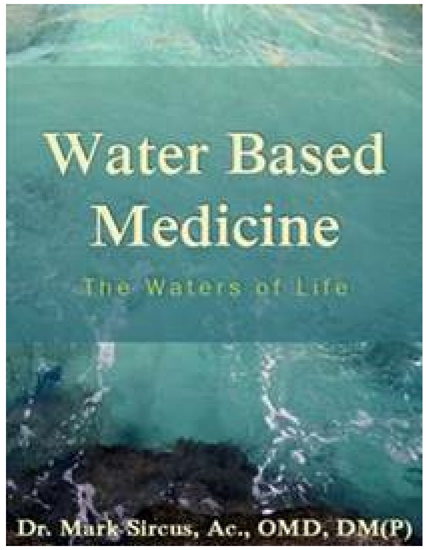
High Dose Hydrogen, Magnesium, Bicarbonate Therapy



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Every patient needs to be fully hydrated and how one does it, makes all the difference in the world. The foundation of every medical and health approach is water. *Water Medicine* is a new and evolving science because we have discovered that what is in our water makes all the difference in the world to our health and even mental well-being. We can drink poisonous water laced with fluoride, chlorine, lead, antibiotics and a host of toxic chemicals including pesticides or we can drink pure water laced with natural medicines like hydrogen, magnesium, bicarbonate and even oxygen.

Water Protocol



In my *Water Medicine* book we start with hydrogen gas and hydrogen water-at intensive levels. We then inject bountiful magnesium into the mix, enough to lubricate every physiological reaction in the body; then the perfect amount of sodium and potassium bicarbonate, because every process in the body is pH and oxygen sensitive. Put it all together and we end up with an elixir for health.

What we are talking about is turning your water into magic medicine, miracle water, into a divine cocktail that will excite every cell, reach every extremity. This simple protocol will water you down to your roots, putting out fires and dryness (dehydration) easier than anything can.

Miracle Healing Waters Made at Home

Science and Medicine have been studying miracle-healing waters found in nature for a long time. Most healing spring waters turns out to be high in hydrogen or in magnesium bicarbonate. It is not just the absence of bicarbonate in our water that leads to diabetes and other diseases including cancer, but also the absence of magnesium.

The presence of high levels of magnesium and bicarbonate in the water insures that it is alkaline. One of the main reasons magnesium bicarbonate is effective and strong is because bicarbonate acts as a transporter of magnesium into the mitochondria. After a few days, one can literally experience the extra punch of energy when drinking water loaded with magnesium bicarbonate.

Healthy healing water is not only pure (filtered) it also has powerful mineral medicines added, principally magnesium, sodium bicarbonate, potassium bicarbonate, hydrogen, iodine, sulfur and selenium. This levels the playing field between water filtration

approaches; for having distilled water, with its lack of minerals, is not a disadvantage anymore. Increase of bicarbonates in the bloodstream will prevent aging and the onset of adult degenerative diseases.

Treatments at home can approach the power of intensive care medicine if we use water as a medicine. Instead of intravenous medicine, we practice *Water Based Medicine*. Water is a "whole food" that nourishes our bodies like no other food. It flushes toxins from the body, supplies needed minerals, and affects the body in numerous ways.

Lack of Bicarbonate Leads to Diabetes, Cancer and Heart Disease

pH means everything to a cell's water life. The most important function of alkaline water is to increase bicarbonates in the blood. We lose bicarbonates as we age. Dr. Lynda Frassetto of the University of California, San Francisco knows, "Insufficient amounts of bicarbonates in our blood reduces our capabilities to manage (neutralize and dump) the acid our body produces. This is the cause of aging. 45 is the average age when human beings start to show symptoms of diabetes, hypertension, osteoporosis and many other adult degenerative diseases. Since we cannot manage the acid, we accumulate acidic wastes in our body. These wastes show up as cholesterol, fatty acid, uric acid, urate, sulfate, phosphate, kidney stones, etc."

It is important to note that people living/working in a polluted environment have fewer amounts of bicarbonates in their blood than people working in a clean environment. [cxxiii]

Water and Cells are Light/Energy Sensitive



There are mysteries still to be solved and one of them revolves around water and how the body can split oxygen from hydrogen to facilitate life. Not only the water in our cells, but everything else in our bodies including our genetic material, is sensitive to light.

Cells respond with hypersensitivity to influences that come from outside the cell. We are our cells and we are more than that, more than the sum of our parts. What you are about to read has implications in life and cellular processes, human health, and disease.

According to a leading researcher of biophotons, German biophysicist Fritz-Albert Popp, light is constantly being absorbed and remitted by DNA molecules within each cell's nucleus. These biophotons create a dynamic, coherent web of light. The laser-like coherence of the biophoton field is a significant attribute, making it a prime candidate for exchanging information in a highly functional, efficient and cooperative fashion.

Water is crucial to biological existence. We find that dehydration alters the formation of proteins and removes water layers around proteins that are essential for maintaining the original protein structure. Dehydration also tends to deplete our energy, leading to inflammation and eventually to diabetes, heart disease and cancer.

We are water and it plays the lead role in living processes not quite understood by physicians; nor a public, which unfortunately are led into dehydrating conditions through the use of pharmaceutical drugs and inappropriate food and drinking patterns. Coke and Pepsi contribute more than anyone can imagine, to people's dehydration (creating hydrogen deficiencies).

Few know that water mediates the interaction between radiant energy and physical existence by allowing itself to be structured by light energy. **Water is light sensitive,**

meaning that we are light sensitive in a sense that goes well beyond the generation of Vitamin D.

Doctors will soon find out that we are more like plants than anyone might believe. Whatever the source the body has a highly refined capacity to absorb and even re-radiate energy across a phenomenal range of the electromagnetic spectrum. So strong is this capacity that writers through the ages have referred to 'rainbow bodies' and 'chakras,' which is an ancient Indian word meaning 'wheels' of energy that vibrate and shine with the same colors of rainbow.

It turns out that liquid crystalline water and
sunlight are practically all we need for energy
and life. Just add sunlight for energy and life.
Dr. Mae-Wan Ho.



Dr. Gerald Pollack, professor of bioengineering, received the highest honor that the University of Washington at Seattle in the United States could confer on its own staff for his work with water. Dr. Pollack says that we are not 70 percent water but, rather, 99 percent.

Pollack's water studies have led to amazing possibilities: that water acts as a battery, that this battery may recharge in a way resembling photosynthesis, that these water batteries could be harnessed to produce electricity. His 2001 book *Cells, Gels and the Engines of Life* Pollack says, "The book asserts, contrary to the textbook view, that **water is the most important and central protagonist in all of life**. There are so many realms of science where water is central. In order to understand how everything works, you need to know the properties of water."

The key to understanding how this water battery works is learning how it is recharged. "You can't just get something for nothing - there has to be energy that charges it," Pollack said. "This puzzled us for several years, and finally we found the answer: **It's light. It was a real surprise.** So if you take one of these surfaces next to water, and you see the battery right next to it, and you shine light on it, the battery gets stronger. It's a very powerful effect."

"I'm suggesting that you - inside your body - actually have these little batteries, and, remember, **the batteries are fueled by light**," Pollack said. "Why don't we photosynthesize? And the answer is, probably we do. It may not be the main mechanism for getting energy, but it certainly could be one of them. In some ways, we may be more like plants and bacteria than we really think."

Sun + Water = Fuel



MIT chemist Dr. Daniel Nocera agrees with Dr. Pollacksaying sunlight can turn water into hydrogen. One day he did a presentation:

> "I'm going to show you something I haven't showed anybody yet," said Daniel Nocera, a professor of chemistry at MIT, speaking to an auditorium filled with scientists and U.S. government energy officials. He asked the house manager to lower the lights. Then he started a video. "Can you see that?" he asked excitedly, pointing to the bubbles rising from a strip of material immersed in water. "Oxygen is pouring off of this electrode." Then he added, somewhat cryptically, "This is the future. We've got the leaf."

What Dr. Nocera was demonstrating was a reaction that generates oxygen from water much as green plants do during photosynthesis--an achievement that could have

profound implications for the energy debate. What Nocera has devised is an inexpensive catalyst that produces oxygen from water at room temperature and without caustic chemicals--the same benign conditions found in plants.

In Nocera's scenario, sunlight would split water to produce versatile, easy-to-store hydrogen fuel that could later be burned in an internal-combustion generator or recombined with oxygen in a fuel cell. Even more ambitious, the reaction could be used to split seawater; in that case, running the hydrogen through a fuel cell would yield fresh water as well as electricity.

This astounding conclusion that water plus light equals energy (fuel) has been struggling to surface for many years but is being resisted by entrenched interests in the energy sector that are not quite ready to give up fossil fuels. Many inventors around the world have invented engines that have run on water but the technology is never put into production. In this video we can see on TV an inventor that burns seawater yielding 1,500 F temperatures.

Dr. Wim Vermaas, at the Center for the Study of Early Events in Photosynthesis at Arizona State University says, "Sunlight plays a much larger role in our sustenance than we may expect: all the food we eat and all the fossil fuel we use is a product of photosynthesis, which is the process that converts the energy in sunlight to chemical forms of energy that can be used by biological systems. Photosynthesis is carried out by many different organisms, ranging from plants to bacteria. The best known form of photosynthesis is the one carried out by higher plants and algae, as well as by cyanobacteria and their relatives, which are responsible for a major part of photosynthesis in oceans. All these organisms convert CO_2 (carbon dioxide) to organic material by reducing this gas to carbohydrates in a rather complex set of reactions. Electrons for this reduction reaction ultimately come from water, which is then converted to oxygen and protons. Energy for this process is provided by light, which is absorbed by pigments (primarily chlorophylls and carotenoids)."

Human Pigment Melanin and Light Absorption

The Human Photosynthesis Study Group in Mexico has been studying the main causes of blindness: age-related macular disease, diabetic retinopathy and glaucoma with the main aim to develop new therapeutic approaches. They found that the human retina, as well as every cell of our body (eukaryotic cell), has, like vegetables, the amazing capability of absorbing energy directly from water .

Melanin, due to its black nature, absorbs all wave-lengths of the light spectrum, from

infrared to ultraviolet. Present in all cells' cytoplasm in form of melanosomes, it absorbs sunlight in the animal kingdom. Mexican researcher Dr. Arturo Solís Herrera (medical surgeon, ophthalmologist, and pharmacologist) of the Human Photosynthesis Study Center found that the pigment Melanin (known by the chemical name polihydroxyindol) seemed to protect the tissues of the eye. Then he found that melanin was collecting energy from electromagnetic radiation, and using it to split water atoms into hydrogen, oxygen, and four additional electrons.

Dr. Herrera claims that hydrogen atoms are sent to cells where they can be recombined with oxygen to produce energy (human body version of a fuel cell). The cells can then use this energy to supplement the sugars the body provides. In this process, melanin acts like a catalyst, promoting the chemical reaction, but not being consumed by it.

Dr. Herrera says that **melanin is "super chlorophyll"** due to its many advantages over regular chlorophyll. "Melanin is to the animal kingdom what chlorophyll is to the plant kingdom." A few of these advantages include: "hundreds of reaction centers" compared to the single reaction center in chlorophyll, the ability to absorb energy from a far broader portion of the electromagnetic spectrum, and the capability to function for years outside of human tissue. Regular chlorophyll becomes totally inactive after only twenty seconds.

The Human Photosynthesis Study Center claims that one third of the energy available to a human being is produced by melanin absorbing electromagnetic radiation, and splitting water into hydrogen and oxygen to produce energy. The main source of energy of the human body is water not food.

[cxxiii] Dr. Gospodinka R. Pradova; January / February 2003; American Industrial Hygiene Association Journal

My experience with hydrogen tablets and inhaler

Paul Harris ND, PSc.D

I have been involved in natural-functional medicine for over 45 years. Most of my patients present with a history of chronic inflammation and multisystem diseases. Damage from free radicals causes inflammation; chronic inflammation, sometimes called persistent low-grade inflammation, happens when the body sends an inflammatory response to a perceived internal threat that does not require an inflammatory response. This inflammatory process is often associated with free radical damage and oxidative stress. It may not cause pain, as some internal organs do not relay pain.

Two of the most destructive free radicals are *Peroxynitrite* and the *Hydroxyl Radical*. Peroxynitrite down regulates mitochondrial function and ATP production in the cell. The hydroxyl radical can damage virtually all types of macromolecules: carbohydrates, nucleic acids (mutations), lipids (lipid peroxidation), and amino acids. The hydroxyl radical has a very short *in vivo* half-life of approximately 10–9 seconds and a high reactivity. This makes it a very dangerous compound to the organism, and significantly contributes to the symptoms and damage associated with chronic multisystem diseases.

With that said, when I was introduced to the hydrogen inhaler and tablets I realized that this product was a perfect fit for my general patient population. I discovered that Molecular hydrogen (H_2) is a selective antioxidant that targets only the most harmful peroxynitrite and hydroxyl radicals, but has no negative effect on useful free radicals such as hydrogen peroxide or nitric oxide.

Unfortunately, most other antioxidants are not as selective and indeed create imbalance in free radicals and antioxidants intracellularly, thus leading to more cellular damage. Actually, molecular hydrogen converts these two *molecular terrorists* into water from within the cell nucleus. The result is simply…water.

My patients have reported significant clinical benefits after several weeks of drinking the hydrogen water 3 times daily and weekly treatments with the inhaler.

Clinical results in 5 patients.

Patient #1: 71 year old female (RN), presents with a diagnosis of RA, angioedema,

Hashimoto's thyroiditis and osteoporosis. I have had her on a comprehensive nutritional intervention program for several months. The addition of the combination H2 treatments has made a significant difference in her clinical symptoms. Her thyroid antibody titers have fallen within the normal range, and her RA flare ups have calmed down. She is very pleased with the results and wants to continue taking the combined treatments indefinitely. She drinks 3 glasses of H2 water daily and receives 2 treatments per week for 60 minutes per session.

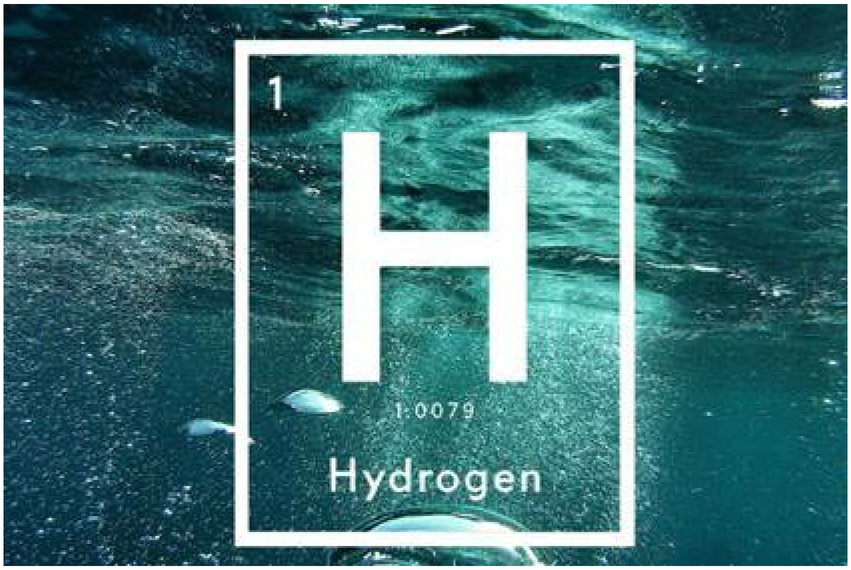
Patient #2: This patient is a 68 year old male who presented with brain fog, lack of endurance and afternoon fatigue. After 2 weeks of the combined H2 therapy he reports a marked increase in energy and no longer goes to sleep on the couch at 7:30 in the evening. The brain fog is also improving and seems to respond extremely well to the H2 inhalation treatments. He takes 1 tablet 4 times per day in 6 ounces of water and four 30 minute H2 inhalation treatments per week.

Patient #4: 52 year old male who presents with an anoxic brain injury secondary to a medical error. He is confined to a wheel chair and has extreme difficulty with verbal communication. He also receives a combination of Vital Reaction Tablets and Inhalation therapy twice per week. Over the course of 11 weeks, his wife (caretaker) reports that she is better able to transfer him from a sitting to a standing position. His memory has not improved yet but his task orientation has clearly shown improvement over the past few weeks.

His wife also states that he is sleeping more soundly waking only one time during the night. Prior to H2 therapy he would wake up every 3 to 4 hours. She is considering purchasing a unit to use at home.

Patient #5: 35 year old female with a clinical presentation of chronic fatigue, severe brain fog and short term memory loss, epigastric pain with alternating constipation and diarrhea. I have successfully treated her with a vigorous detoxification and nutritional support regime. She recently came back in with a reoccurrence of some of her symptoms. We decided to begin the H2 tablet and inhalant treatment in addition to her current nutritional intervention program. Within 10 days she reported that her GI complaints had significantly calmed down, a noticeable difference in daytime energy levels and a gradual improvement in brain fog. She will continue to receive treatments for 90 days at which point we will reevaluate her case.

Short Testimonies



I have Lyme disease. Prior to using hydrogen and oxygen gas, I had no energy and had to pause when climbing a flight of stairs. After 2 hours of inhalation of Molecular Hydrogen, I had so much energy I could run around the block. My fatigue and tiredness did not return! M. H.

Dr. Julian Whitaker reports:

> A businessman in his 60s reports that since he started drinking hydrogen water, he has more energy and his memory is sharper than ever. A runner says it has improved her endurance and sleep, and she has fewer aches and pains.
>
> The daughter of a woman with Alzheimer's disease noticed rapid improvements in her mother's ability to remember names and events, and now she's doing activities such as showering without help and "getting back to her old self."
>
> A young man awoke from a three-month coma following a motorcycle accident with a dire prognosis due to severe cognitive, speech, and mobility problems. Hydrogen water jumpstarted his recovery, and today he is back working as a fitness instructor.
>
> Patients with Parkinson's disease who drank hydrogen water in a placebo-

controlled clinical trial had significant improvements in their symptoms, while the placebo group got worse. In addition, in a pilot study of people with rheumatoid arthritis, it caused notable reductions in joint pain and swelling.

I have been using Vital Reaction Tablets for the past 3 months now and have been feeling great! I was in good health before, but since using the tablets, both my focus and energy levels have improved. I was just about to get reading glasses and am happy to report my eyesight has sharpened enough so that I do not need them! In addition to all of this, my strength training and yoga practice have both expanded, due to less recovery time between workouts. I used to get very sore post workout and now feel like my hydration level and the reduction in inflammation are allowing me to make gains I otherwise would not have been able to reach. This is a product I will always have on hand and cannot recommend it enough! Emery

"I have been battling depression and PTSD for most of my life. With that comes high stress and anxiety. I purchased the Vital Reaction Inhaler about three months ago and have been using it 2 times a day. I notice an increase in overall mental balance and a feeling of well-being. It's the only thing that works immediately. I am no longer on my anti-anxiety medication and have been able to use my brain like never before. My focus is on point and even my vision has improved. I won't go another day without it. Thanks VR." Ann

"As a competitive athlete, I am always looking for the next best way to shave a few seconds off of my race time. I take one VR Tablet before and after training and have noticed a significant increase in endurance and less inflammation. I actually recover faster because of lowered lactate build up due to improved ATP production. This is my ultimate secret weapon." Michael

"I've used 2 tablets every day for one month. Definitely seen results with my ADD /ADHD. With the inhaler, I see a change in minutes. Now I'm going to use the VR tablets daily." Leah

"I take 2 VR Tablets daily and it not only gives me more energy, but improves the results of other supplements I take. I give one tablet a day to my kids in their morning OJ and they seem to focus better. It feels like it's a great way to get the body in balance. I've even dropped a tablet in warm water to wash my face and it seems like my skin tone has improved. Is there anything that H2 doesn't do?" Michelle

Darkfield Test by George Wiseman

One subject had Darkfield microscopy while inhaling HydrOxy through a nasal cannula. The hydrogen concentration in the inhaled was 8 - 9% by volume. Undiluted HydrOxy has a hydrogen concentration of 66.6%.

There were lots of sparkling lights in the plasma, and massive rouleaux formations - red blood cells (RBCs) stacked together like rolls of coins. Within minutes after stopping the inhalation of hydrogen gas the RBCs were single. Two other subjects had the same results with this test.

Fig.1a: Blood during BG inhalation Fig.1b: Blood 10 minutes after inhalation stopped

RBCs behave like colloids. They are kept apart by a difference in the electric potential between the RBCs and the blood plasma. This difference is called the zeta potential (ZP). RBCs have a negative electric charge on the outside. This attracts positive ions which surround the RBCs and keep them apart from each other. When ZP is high, a colloidal system is stable and colloids or RBCs remain apart, but when the ZP drops, the RBCs move closer together and may coagulate.

Hydrogen for Sports Medicine



Molecular hydrogen is an innovative treatment for exercise-induced oxidative stress and sports injury, with solid potential for the improvement of exercise performance. Athletes tend to dream of having rocket power in their boots. With hydrogen this is literally possible. Just ask any rocket engineer or futuristic car designer what hydrogen fuel does to move heavy objects around with ease.

Hydrogen, with its antioxidant, anti-inflammatory, cell signaling alkalizing properties is ideal for sports medicine, for it can reduce muscle fatigue, relieve the pain from intense workouts and accelerate recovery from serious injuries which befall many athletes.

In the future every professional sports team will have a powerful hydrogen inhaler on the sidelines so treatments for serious and even minor injuries can start immediately. This would be especially important and useful when athletes suffer from concussions, which are all too frequent in the sports of football, wrestling and soccer.

The rationale for H2 use in sports, up to this point, centres mostly around hydrogen's antioxidant properties. Since intensive exercise results in ROS overproduction and free radical-mediated damage to tissues[cxxiv], use of a potent antioxidant such as H2 will diminish oxidative stress and ROS-related disorders (e.g. fatigue, micro-injury, inflammation, overtraining). Additionally, hydrogen-rich water exhibits a high pH that may be beneficial for exercise-induced acidosis[cxxv], a common metabolic disturbance among physically active individuals.

> "I have a molecular hydrogen inhaler and have been using it for athletic protocols. I've been measuring incredible benefits from my Ora sleep ring; much deeper rem sleep, and recovery after my long runs (I do the 100 mile + ultra marathons). A friend who I recently introduced to hydrogen inhalation is a top world ranked tri-athlete. He has seen amazing benefits for recovery, and in his ability to train each day," writes Todd Shipmen.

Medical scientists who studied the 'Effects of drinking hydrogen-rich water on muscle fatigue caused by acute exercise in elite athletes', wrote, "Since energy demands and oxygen consumption increase during super-maximal exercise, (such as intermittent running, sprints, and jumps), production of reactive oxygen species (ROS) and reactive nitrogen species (RNS) also increase, threatening to disturb redox balance and cause oxidative stress. During normal conditions, ROS and RNS are generated at a low rate and subsequently eliminated by the antioxidant systems. However, a greatly increased rate of ROS production may exceed the capacity of the cellular defense system. Consequently, substantial free radicals' attacks on cell membranes may lead to a loss of cell viability and to cell necrosis and could initiate the skeletal muscle damage and inflammation caused by exhaustive exercise."[cxxvi]

Reducing the muscle fatigue

Intense exercises produce lactic acid which reduces the pH of the muscles. That is one of the factors that can promote muscle fatigue, which means less strength or inability to contract muscles. Lactic acid is a strong acid, which ionizes, releasing ions of H+ and ions of lactate. The increase of the concentration of H+ can compromise the execution of exercise in two ways:

> (1) The increase of the concentration of H+ reduces the capacity of the muscle to produce ATP, and
>
> (2) The H+ can compete with the ions Ca+ for the troponin binding sites and in this way, will impede the contractile process.[cxxvii]

Adequate hydration with hydrogen-rich water pre-exercise reduces blood lactate levels and improves exercise-induced decline of muscle function.[cxxviii] Hydrogen therapy in sports medicine is an effective and specific innovative treatment for exercise-induced oxidative stress and sports injury, with potential for the improvement of exercise performance.[cxxix]

One study in 2012 with 10 elite male soccer players was made to examine the effect of

hydrogen-rich water (HW) on muscle fatigue caused by acute exercise. The oral intake of HW prevented the elevation of blood lactate during heavy exercise.

> "As a competitive athlete, I am always looking for the next best way to shave a few seconds off of my race time. I take one hydrogen tablet before and after training and have noticed a significant increase in endurance and less inflammation. I actually recover faster because of lowered lactate build up due to improved ATP production. This my ultimate secret weapon." Michael

A study in 2012 with 52 physically active men was made to test the hypothesis of the increase of the blood pH with hydrogen. 26 participants received 2 liters of hydrogen water and 26 participants received a placebo. After 14 days the intervention group which ingested the HW showed a significantly increased fasting arterial blood pH by 0.04 and post exercise pH by 0.07. Fasting bicarbonates were significantly higher. No participant reported any side effects.[cxxx]

Muscle Burning

Muscles, under stress and aggressive exercise feel like they're "burning" as acidosis kicks in and Lactic Acid is produced. This causes latent muscle fatigue. That's the downside to all intense exercise - the lactic acid burn and the residual fatigue that it causes.

In the study with elite athletes above, Hydrogen Water actually prevented lactic acid (acidosis) in the cells - there was no "burn"

> I've experienced this for many months now - and directly the other day, in an intense workout on a bike, climbing 400' in .4 of a mile - with no muscle burn AT ALL. I hadn't taken this ride (rotten weather up here) for several weeks. Hopped on the bike "cold" and climbed 800' total and returned, with that really nasty 400' section as an H I I T portion of the workout. NO residual muscle fatigue. NO burn in the muscles during the ride. E. W.

Treating Injuries



The last thing any trainer or sports doctor wants to see is their athletes injured. Dr. Jeff Schutt says that hamstring injuries can be avoided through nutritional support because contraction and relaxation is dependent on adequate cellular levels of magnesium. "A shortened hamstring is a result of lack of available magnesium," he says. Liquid magnesium chloride can be simply sprayed and rubbed into a sore Achilles tendon to decrease swelling. And soaking the feet in a magnesium chloride footbath is the single best thing - apart from stretching - that you can do for yourself to protect from or recover from hamstring and other injuries.

However, injury is an almost inevitable part of an athlete's life. It may take the form of an acute ligament tear or be as mild as post-exercise muscle soreness. Either way, most sports related injuries can be prevented or alleviated. Every athlete gets injured from time to time. It's part of the courage and discipline of athletes to endure, and a challenge to their spirits to remain positive and optimistic about their return to full performance. When an athlete gets injured they want top quality care at the leading edge of sports medicine.

Muscle stretching is a common injury in athletes; mainly in soccer players and in runners. Leg muscle injury is the most common. Basically it is the rupture or partial rupture of the muscle, which results in the removal of the athlete from exercise for a stretch of time depending of the level of the injury. The rupture also causes pain, inflammation and the inability to contract the muscle.[cxxxi]

One study in 2013 examined the effects of 2-week administration of hydrogen on the biochemical markers of inflammation and functional recovery in male professional athletes after acute soft tissue injury. **Differences were found for range-of-motion**

recovery when using hydrogen; oral and topical hydrogen intervention resulted in a faster return to normal joint range of motion for both flexion and extension of the injured limb as compared with the control intervention. The conclusion of the authors was that the addition of hydrogen to traditional treatment protocols is effective in the treatment of soft tissue injuries in male professional athletes.[cxxxii]

> Age 40- Male (Sasebo resident) "Didn't feel anything after my first treatment. Woke up in the early morning the next day to use the bathroom. Normally my knees and ankles are stiff and crack while walking. I felt different... younger. Mind also very alert for 4:30 am!! Played sports my whole life. Definitely, have some wear and tear. After several H2 treatments, my golf game has improved significantly. Smooth and stable like I was 20 again!! H2 inhalation after hangover was like a miracle cure. Really!!"

The abilities of mixed gas to cause rapid recovery from injuries that would normally take months - or have stagnated in the healing process - have been demonstrated. For example, muscle and proprioceptor instability that can be corrected by the presence of hydrogen - in minutes - will cause trainers, physical therapists and doctors to carefully consider the power of this new tool for repair and rejuvenation.

Hydrogen Led Sports Protocol



If you are like most athletes, you want to heal naturally from your injury and do so in record time without having to resort to drugs or surgery. Endurance and competitive sports and intensive power training requires optimal, balanced nutrition, as they place heavy demands on the body. Good nutritional practices should be a part of every athlete's normal daily routine. Nutrition is one factor that every athlete can control and maximize to achieve the highest potential for performance.

Whatever your level of sporting achievement far-infrared therapy is going to be a great help and comfort. Daily and nightly treatments on an infrared mattress, at home, offers pain relief after strenuous workouts and offers athletes a safe, fast return to peak performance.

The secret to Olympic success is higher concentrations of oxygen delivery to the cells and until recently to do that they had to live at high altitudes and train there. That is no longer necessary. One can now train comfortably in one's own bedroom with EWOT training (Exercise with Oxygen Therapy), which comes in two forms, the basic and the simulated high-altitude training. Oxygen-rich bloodis one of the most important components for sports performance.

The Special Case of Iodine in Sports Medicine

Athletes or those participating in vigorous exercise can lose a considerable amount of iodine in sweat, depending on environmental factors such as temperature and humidity. In areas of lower to moderate dietary iodine intake, loss in sweat can equal that in urine. Iodine is mission critical to high levels of sports performance because "Iodine deficiency sets a cascade of energy-depleting effects in motion," writes Dr. William Davis. Hallmarks of thyroid deficiency are fatigue and low stamina, not something you want to find yourself plagued with when looking for high performance.

The Special Case of Sodium Bicarbonate

A report published in 2010 in "Food and Nutrition Sciences" states that athletes who participate in events taking one to seven minutes, such as 100- to 400-meter swimming and 400- to 1,500-meter running, benefit most from sodium bicarbonate. In regard to resistance training, a study published in 2014 in the "Journal of Strength and Conditioning Research" demonstrated a marked improvement in performing squats and bench presses to exhaustion when participants took baking soda compared to a placebo. Studies of elite rowers doing a 2k for time, for example, tend to note no benefit or an insignificant one. Swimming is the opposite; studies using a repeated sprint protocol (either 10 sprints of 50m or 5 sprints of 100-200m) have shown that the decline in performance normally seen with repeated sprints is abolished with sodium bicarbonate.

Conclusion

In the very near future, the reality of widespread Hydrogen/Oxygen gas usage in Sports Medicine will become a reality. On the performance side, machines that can safely

provide enough mixed gas (Hydrogen and Oxygen) for delivery to multiple athletes at the same time, will provide them with protections from the intense oxidation stress that high intensity activities cause in the body. This protection will take the form of both pre- and post-workout protocols that include infused water and inhalation. These protocols will revolutionize the fitness industry.

If you are an athlete you will want a hydrogen inhaler in your house and your professional team will want one on the sidelines, a powerful hydrogen inhaler that will saturate a freshly injured body in minutes with soothing hydrogen and life-giving oxygen.

Hydrogen will enhance performance. It will decrease the pain of intense sports; recovery times from injuries will be much shorter. We should have guessed that the same gas that would make it possible to dive almost 2,000 feet down in the sea, enabling human activity at bone crushing depth and stress, would give up its life sustaining power to athletes on the surface.

[cxxiv] Powers SK, Jackson MJ. Exercise-induced oxidative stress: cellular mechanisms and imp

[cxxv] 6 Ostojic SM. Serum alkalinization and hydrogen-rich water in healthy men. Mayo Clin Proc 2012; 87: 501-502

[cxxvi] Pilot study: Effects of drinking hydrogen-rich water on muscle fatigue caused by acute exercise in elite athletes Kosuke Aoki, Atsunori Nakao, Takako Adachi,1Yasushi Matsui, and Shumpei Miyakawa

[cxxvii] https://repositorio-aberto.up.pt/bitstream/10216/21741/2/39412.pdf

[cxxviii] Med Gas Res. 2012; 2: 12. Pilot study: Effects of drinking hydrogen-rich water on muscle fatigue caused by acute exercise in elite athletes Kosuke Aoki, Atsunori Nakao, Takako Adachi, Yasushi Matsui, and Shumpei Miyakawa

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[cxxxi] http://www.sbrate.com.br/pdf/artigos/atualizacao_lesoes_musculares.pdf

[cxxxii] http://www.tandfonline.com/doi/abs/10.3810/pgm.2014.09.2813

Hydrogen Inhalation Therapy for City Dwellers



The air we breathe is laced with cancer-causing substances and should now be classified as carcinogenic to humans, the World Health Organization's (WHO) is now declaring. It really does matter where you live and where a person treats their cancer. One does not want to be anywhere near a city like this when battling their cancer.

The WHO this month classified outdoor air pollution as a leading cause of cancer in humans. "The air we breathe has become polluted with a mixture of cancer-causing substances," said Kurt Straif of the WHO's International Agency for Research on Cancer (IARC).

"We now know that outdoor air pollution is not only a major risk to health in general, but also a leading environmental cause of cancer deaths." Although the composition of air pollution and levels of exposure can vary dramatically between locations, the agency said its conclusions applied to all regions of the globe.

Air pollution was already known to increase the risk of respiratory and heart diseases. The most recent data, from 2010, showed that 223,000 lung cancer deaths worldwide

were the result of air pollution, the agency said. Cancer is rising alarmingly around the world and yet not any of the money that governments have thrown into the war on cancer is stopping the accelerating cancer epidemic. One of the reasons why is that air pollution is getting worse and negative health effects are accumulative.

Most of our cancer patients have
a lot of amalgam dental fillings.
Professor W. Kostler

Mercury vapors in the mouth is another form of air pollution. **Each year in the U.S. an estimated 40 tons of mercury are used to prepare mercury-amalgam dental restorations**. "Mercury from amalgam fillings has been shown to be neurotoxic, embryotoxic, mutagenic, teratogenic, immunotoxic and clastogenic. It is capable of causing immune dysfunction and autoimmune diseases," writes Dr. Robert Gammal.

Humanity is traveling down a deadly path. There is "overwhelming evidence that every child, no matter where in the world he or she is born, will be exposed, not only from birth, but from conception, to man-made chemicals that can undermine the child's ability to reach its fullest potential -- chemicals that interfere with the natural chemicals that tell tissues how to develop and construct healthy, whole individuals according to the genes they inherited from their mothers and fathers," says Dr. Theo Colborn, Senior Program Scientist, at the World Wildlife Fund.

Cancer risk among people drinking chlorinated water is 93%
higher than among those whose water does not contain chlorine.
U.S. Council of Environmental Quality

Today mankind is exposed to the highest levels in recorded history of lead, mercury, arsenic, uranium, aluminum, copper, tin, antimony, bromine, bismuth and vanadium, just to mention a few of the metals and thousands of chemicals flooding the environment. Levels are up to several thousand times higher than in primitive man.

The heavy metals in the air we breathe contribute to carcinogenesis by inducing/increasing oxidative stress.[cxxxiii] Oxidative stress damages DNA and can lead to mutations that promote cancer.[cxxxiv] ,[cxxxv] ,[cxxxvi] Heavy metals also disrupt the process of apoptosis (programmed cell death).[cxxxvii] Apoptosis is vital for safe removal of sick/unhealthy cells, including cells that may become cancerous.

Your doctor will always understate the risks and dangers of the drugs, tests, radiation and surgery he or she will recommend. That is to be expected. The question of air

pollution and cancer calls into question the place where we seek treatments. Is the hospital and its location important to treatment success? We know how dangerous hospitals are in terms of antibiotic resistant infections. However, how about the air that surrounds and penetrates them?

It Matters Where You Live



Millions of people living in nearly 600 neighborhoods across the country are breathing concentrations of toxic air pollutants that put them at a much greater risk of contracting cancer.

Environmental Protection Agency

It really does matter where you live and where you treat one's cancer. Do not choose a hospital to treat your cancer in any of these neighborhoods! This whole subject of location safety is getting more complicated because Fukushima is threatening populations all over the northern hemisphere, especially more local and downwind lands like North America.

If you are sick and are living in a city where you can literally see the air when looking from a distance you need not wonder so much about the cause of your illness. It is right there in the air you breathe. It might not be the only source of your disease but it is a cause - a part of the etiology. Every human being on the planet is being poisoned but in some places it is like a gas chamber, forcing poisons into our bodies until we get sick and

then die.

As adults, we make certain decisions as to where we work and live and that is just a fact. It is tragically sad that our young ones have neither choice nor option in this regard. They are much more vulnerable to environmental threats and we do have reports of increased infant mortality since Fukushima melted down over two years ago.

Los Angeles, Calif. and Madison County, Ill. had the highest cancer risks in the nation according to EPA data. *Allegheny County, Pa. and Tuscaloosa County, Ala., placed strong second place.*

A study suggests that the air we breathe increases insulin resistance and inflammation. [cxxxviii] Cardiovascular and lung researchers at The Ohio State University Medical Center are the first to report a direct link between air pollution and diabetes, which eventually and statistically leads itself to increases in cancer rates.

It is not just the toxic medicines and medical procedures that we need to avoid like the plague but even the cancer treatment centers located in polluted urban centers. They built nuclear plants on fault lines with the complete illusion that accidents would not happen and the same kind of insanity lead to hospitals in the hearts of cities with the worst food and most dangerous infections waiting for the people who enter.

In the future of humanity healing centers will be more appropriately placed and protected, though one wonders if there will be any pristine places left on earth in the very near future. We should have avoided building nuclear power plants with uncontrollable and unmanageable technology on fault lines and we should not have built big hospitals downtown that are getting too dangerous to walk into.

Most hospitals have nuclear facilities of their own to test and treat patients. If one wants to be poisoned or cut up into pieces it is the right place to go but healing from cancer involves something that helps instead of hurts.

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Singlet Oxygen Therapy



Singlet oxygen is a dioxygen (O_2) molecule in which two 2p electrons have similar spin. Singlet oxygen is more highly reactive than the form in which these electrons are of opposite spin. Singlet oxygen is produced in mutant chloroplasts lacking carotenoids and by leukocytes during metabolic burst. Singlet oxygen is a high-energy form of oxygen.

"Singlet oxygen is one of the most interesting and versatile molecules within the ROS family. Its potential for the control of oncogenesis and in a variety of therapeutic antitumor approaches has essentially been underestimated. Singlet oxygen has been shown to inactivate catalase through reaction with histidine at the active center of the enzyme and thus to abrogate the antioxidant activity of one of the central molecules of tumor cells."[cxxxix]

Singlet oxygen has been known to the scientific community for over 80 years. It has a characteristic chemistry that sets it apart from the triplet ground state of molecular oxygen, and is important in fields that range from atmospheric chemistry and materials science to biology and medicine.[cxl]

In nature, energy from our sun activates chlorophyll in plant leaves that transforms the oxygen produced by a plant to a higher-energy status. Nature actually rearranges the electrons in the oxygen molecule to create "singlet oxygen." This energetically charged air boosts your body's ability to use oxygen, increasing your cellular energy and optimizing cell metabolism.

There are now several companies using high technology to alter oxygen at the atomic level and give it "that little electrical charge set up by the sunshine." The technology imitates the natural process by which sunshine and chlorophyll produce energy-maximizing, free radical-fighting activated air.

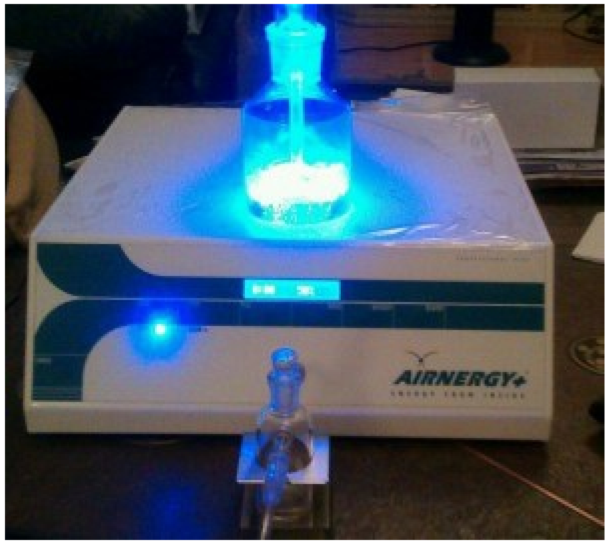
Similar to the air in a dew filled forest after rain has fallen singlet oxygen cleanses your body. Singlet oxygen is formed on the surface of the leaves of plants and trees through a process called photosensitization. Photosensitization requires oxygen, light, and a proper photosensitizer, like chlorophyll, which can act like a catalyst to transfer the light energy to the oxygen. The result is singlet oxygen, with a distinctively high level of energy.

For a small fraction of a second during the photosensitisation process, the oxygen molecule destabilises and becomes Singlet Oxygen. This occurs when one of the molecule's electrons starts spinning in the opposite direction and rotating in a wider arc before returning to its original position. When it does so, what is known as Singlet Oxygen Energy (SOE) is emitted. Although the lifetime of Singlet Oxygen can be measured in thousandths of a second, the energy released can be quite significant. In nature, we have witnessed the regenerative properties of SOE in relation to plant growth.

Dr. Claudia Schöllmann writes, "Through a process similar to photosynthesis, oxygen is continuously converted into the singlet state. In the unit the singlet state ($1\Delta2$) of O_2 reacts back into the triplet basic state which occurs naturally in the air ($3\Sigma2$). The energy that is released during this conversion back to the triplet state is immediately absorbed by water molecules in the (moist) air that is breathed in. The user breathes in these activated water molecules - and not activated oxygen states - via a lightweight nasal cannula. In the organism the air energy improves oxygen utilisation and the anti-oxidative capacity - this can be measured. It is still not completely clear just how the energy of the water molecules is transformed into metabolic energy. Many findings would suggest that the energy-rich water molecules carry their energy/information to points in the body where the organism activates oxygen itself in order to utilise it, or its energy, for metabolic reactions. Important "points" in these terms are the surface films (surfactants) in the alveoli, the interstitial and intracellular fluids as well as the fluid membranes of the cells and mitochondria."

Dr. Claire Bowen writes, "Oxygen is not only key to energy production - it is also an essential component, in its different forms, of the body's detoxification system (through the process of 'oxidation' of toxins into harmless basic elements), the immune system (for example, as the superoxide ion used by immune cells to fight invading pathogens), the optimal absorption and assimilation of nutrients from digestion in the gut, as well as the body's own self-healing mechanism through the 'oxidative response.' For recovery from any illness and movement towards truly optimum health, we really need to optimise the amount and quality (i.e. how available it is) of the oxygen we inhale, transport around our body and provide to our cells!"

Traditional oxygen therapies are based on the assumption that providing the body with more oxygen will result in more oxygen actually being used by the cells of the body. Activated Oxygen Therapy uses a different basis - that the oxygen in normal air can be altered to improve absorption and utilisation within the body, without increasing the pressure or concentration of oxygen inhaled.



How do we know if Activated Air actually works?

Activated Air makes you feel better. In addition, European and Swedish scientists have put Activated Air devices through a number of biological measures to show that it has a measurable effect. Some of these measures include heart rate variability (which reveals the health of the autonomic nervous system), basal metabolic rate (which shows the body's energy expenditure), blood oxygen levels, resting heart rate, unused, exhaled oxygen and lactate production in athletes.

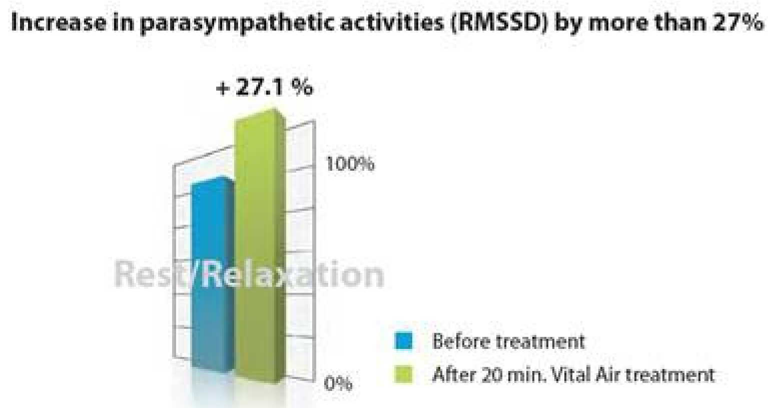
Results from studies using athletes that train with Activated Oxygen:

· A minimum of 8% more energy generation

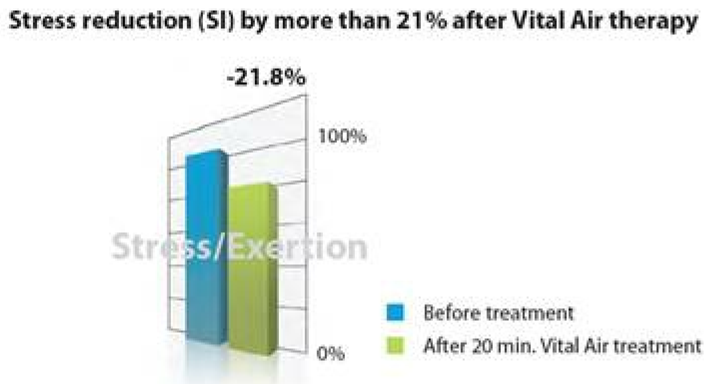
· An average of 10% reduction in unused exhaled oxygen

· A 10% reduction in resting heart rate

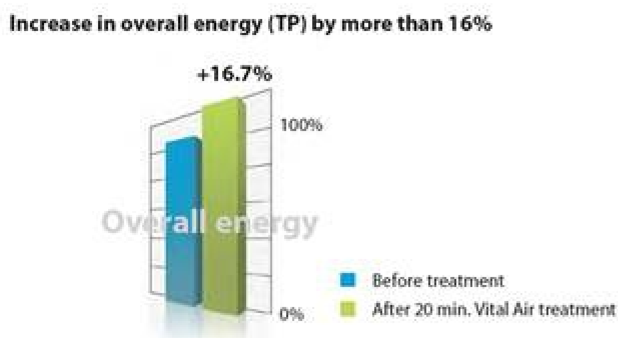
· A minimum of 7% less lactate production



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Not focused towards a specific symptom nor a specific body organ, this safe and easy-to-use treatment helps balance the body system at a cellular level, meaning that numerous health conditions and imbalances can be improved simultaneously, with consistent and regular use.

Thus, an optimisation of the oxygen utilisation by applying the Singlet Oxygen Energy (SOE) technology can lead to enhanced performance in our cells. Stress hormones are normalised under SOE application, you become more stress resistant, sleep better, are

be more relaxed in the mornings.

Activated Oxygen Therapy thereby achieves the same aim as other oxygen therapies in terms of improving cellular oxygen levels in the body with consequent effects on health and wellbeing - in addition to kick starting the cells' healing reaction via the 'oxidative response' of the body.

When using the stronger machines treatments as short as 20 minutes a few times each week, users report a wide variety of benefits. In Europe, burn clinics report 1/3 faster healing of serious burn trauma. Surgeons report dramatically faster recovery from surgery. On another front, athletes claim that Activated Air not only makes them better performers but also improves their reaction times and perceptual acuity.

Oxygen is a double-edged sword.

On one hand, our cells thrive when they get the oxygen they need to freely synthesize ATP, which is the nearly universal "molecular currency" of cellular energy exchange. When your cells have an ample supply of ATP, your tissues heal and regenerate faster, metabolic pathways work better, your nervous system stays attuned and your immune responses become more focused and effective.

On the other hand, oxygen is also enormously reactive. Cell damage is induced by reactive oxygen species (ROS) such as the hydroxyl radical, superoxide, hydrogen peroxide, and peroxynitrite.

SoeMac



The SoeMac is the world's first and only home use Singlet Oxygen Energy therapy device. Until now, this which rely on the use of a nasal cannula, or mask, to deliver the Oxygen Energy to the user. Oxygen Energy therapy has only been available to users by means of expensive, large machines. And as this book goes to print I have word from

Soemac that they are going to come out with a professional device that will out perform the more expensive machines with even higher output that possible before.

SoeMac makes it possible to deliver the health benefits of Oxygen Energy therapy that have previously only been available in hospitals and clinics for the last 20 years. It is much more affordable, and easy to use, in your home. Of course it does not possess the power and punch of these larger machines but to sleep with a SoeMac right at your head all night long is nice, even if you have or receive treatments from the more powerful machines.

The air is sucked through the machine using a small fan and is then expelled into the ambient air of the room and breathed in the normal way. The product can sit in the corner of a room, quite often a bedroom, and runs overnight, when the body is in its natural stage of regeneration and recuperation. For the user, it is completely passive, and does not require any changes to behaviour. Place it on a bed table and run it through the night in a completely closed room aimed at your sleeping body. The oxygen it generates goes into the cells of your body.



SoeMac can help to relax the lungs, enabling them to work more efficiently by increasing the clearance of mucus which can create more lung "elasticity". SoeMac can help to enable more relaxed breathing, with less "fighting for breath" so that our body can get more oxygen into our system, right down to the cellular level, where it is needed most.

A good night's sleep is essential for our physical and mental wellbeing. During periods of deep sleep our body carries out essential repair and regenerative work, and without this, there can be a downward spiral in our energy, focus, and ability to enjoy our lives.

Experiment with SoeMac

Test apparatus: 3 SoeMac machines, in a wooden box, with air inlets on one side, and an outlet tube connected to a simple face mask. Patient was hooked up to Dr.+ Peter Julu's machine which recorded many different readings, including BP, pulse, breathing, pO_2, pCO_2.

Initially patient's readings were taken in a sitting position for 5-10 minutes, the laying down for 5-10 minutes. Once the base line was established, the mask was used, and all 3 SoeMac were turned on, and run for 5 minutes. Then one was turned off, leaving 2 running, for a further 5 minutes, and then another was switched off, leaving just 1 running for a further 5 minutes. Then this was also turned off, and patient underwent a 5 minute "wash-out" period with no machines running.

The pO2 results were recorded as follows;

No machine 80mm Hg

3 machines 119mm Hg

2 machines 108mm Hg

1 machine 96mm Hg

His conclusions so far are;

1. The SoeMac boosts molecular oxygen in the body

2. The output of the SoeMac is constant

3. The output is proportional to the number of machines

The SoeMac has changed my life .

Andrew Norton with COPD /Diabetes. February 2015

I joined the Coldstream Guards in 1962 AS 23929889 GDSM A. Norton GM 2nd Battalion. When in Aden on 24th October 1964, I was blown up on a MK7 Anti Tank Mine with 3 Mortar Bombs under it. It took my Officer's left leg off above the knee. I suffered burns and sand blasting to most of my body. Most explosives are poisons when exploded. They form compounds that get in your lungs and over the years my lungs have grown worse. I was awarded the George Medal, as at that time Aden was a protectorate. On return to the UK, I was made man of the year, along with Jim Clarke and Donald Campbell.

I have good knowledge of health issues, as I was a Paramedic with the London Ambulance Service for 25 years. Over the years I got worse until in 2008 I was discharged with lungs and back problems. My back was just an ache, but my breathing was now very bad. I could not sleep because I could not breathe properly. Then a

specialist diagnosed me with COPD, and from then on I went to Casualty on a regular basis. In 2013, I was really dying to tell the truth and spent most of my time in bed as I was chronically fatigued, as I was not getting enough oxygen.

Then I got the SoeMac, and within 5 weeks I was out of bed living a normal life. I am 74 and am now as active as when I was in the Forces, in my 20's. Thanks to SoeMac. I owe my life to this man and his company.

Introducing the SoeMac Pro



SoeMac have designed and prototyped a more intensive version of the SoeMac, called the SoeMac Pro. Initial testing has been very positive, and they are currently building a small number of devices, for further testing and research. SoeMac Pro gives a 20-minute treatment using an AeroChamber breathing mask, held to the nose and mouth as each breath is taken. This can be repeated up to three times each day.

I will be receiving one of these prototypes in May sometime and look forward to reporting back on my experiences with it. The following is what SoeMac has found in its early testing.

Analysis of the relative level of Oxygen Energy produced by different devices.

Machine	Number of Catalysts	% Oxygen Energy delivered to body %	Treatment Hours	Total Yield Φ	No. of Daily Treatments	Daily Yield Φ	Cost £	Cost per daily Quant £/(Φ*No.)
SoeMac	2	5%	8,00	0,800	1	0,800	419	524
SoeMacPro	6	90%	0,33	1,800	3	5,400	1.695	314
Airnergy Pro Plus (Has 4 catalysts, but only 2 are operational)	2	40%	0,33	0,267	3	0,800	4.795	5.994
Valkion	2	40%	0,33	0,267	3	0,800	3.300	4.125
Vital Air 3 (Has 3 catalysts, but only 2 are operational)	3	40%	0,33	0,267	3	0,800	3.950	4.938
Vital Air 5 (Has 5 catalysts, but only 3 are operational)	5	40%	0,33	0,400	3	1,200	4.650	3.875
Eng3 Nano V1 Pro US $8,300							6.014	
Eng3 Nano V1 US $4,900							3.551	

The Airnergy and VitalAir products bubble the activated air through water halfway through their process, which has the effect of "neutralising" that air, so only catalysts after the water bottle actually energise the air that is eventually breathed

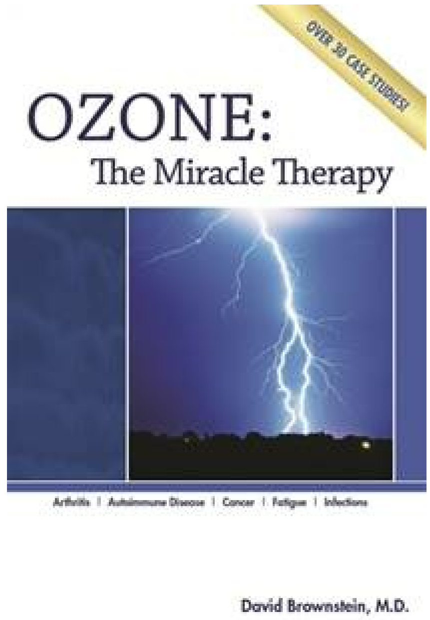
Running the SoeMac for 8 hours overnight gives an equivalent treatment to 3 x 20-minute sessions with the Airnergy, Valkion, and VitalAir3.

The new SoeMacPro is highly efficient as 90% of the activated air is inhaled, and it can be seen from the chart that it is 1/3 the cost of the Airnergy, but delivers more than 6 times the Oxygen Energy, making it 20 times better value for money.

[cxxxix] Anticancer Research November 2016 vol. 36no. 11 5649-5663

[cxl] http://pubs.rsc.org/en/content/articlelanding/2010/cs/b926014p#!divAbstract

Ozone Therapy and the Oxygen Wars



"The federal and state medical authorities are currently seizing and destroying ozone machines. The legal conventions here assume that a physician can't use a treatment that the other doctors around him aren't using. They come in and arrest him and try to strip him of his license. There are many cases pending right now, sincere ' doctors trying to help their patients by using harmless natural type remedies. They're being attacked, losing their insurance privileges, they won't let them use ozone. I interview cases where they use SWAT teams home and break down that door too. They push everyone, mothers and grandmothers, against the wall at gunpoint, and take all the patient records, the ozone machine machines, and the computers and backups. The doctors never get them back. Certain newspapers report this, but leave out the indignities. In their stories they ignore stacks of medical evidence sent to them - including the personal testimony of ex-patients who show up in their editorial offices to correct the biased reporting. They write "Experts say ozone is worthless." "Experts" with absolutely no training or experience with medical ozone. But the public doesn't know that. We are witnessing the oxygen wars," writes Ed McCabe.

Ozone removes viruses and bacteria from blood, human and stored. It has successfully been used on AIDS, herpes, hepatitis, mononucleosis, cirrhosis of the liver, gangrene, cardiovascular disease, arteriosclerosis, high cholesterol, cancerous tumors, lymphomas, leukemias, highly effective on rheumatoid and other arthritis, improves mental sclerosis, ameliorates Alzheimer disease, senility, and Parkinson's, effective on proctitis, colitis,

prostate, candidiasis, trichomoniasis, and cystitis. Externally, ozone is effective in treating acne, burns, leg ulcers, open sores and wounds, eczema, and fungus. That's the kind of world we live in where we have SWAT teams trying to eliminate good things from life. Ozone is a form of oxygen, an interesting form with interesting broad uses.

During WWI, physicians applied ozone topically to infected wounds because of its antibacterial properties. Later they discovered it had broader therapeutic applications, thanks to its anti-inflammatory properties. In the late 1980s, German physicians began successfully treating HIV patients with ozone. Although there are some practitioners within the U.S. who administer ozone, it remains a relatively uncommon treatment even today. Ozone is a well-respected therapy in many parts of the world. In Germany, it is the standard of care and is used by 70-80% of practicing physicians.

The lack of health that exists in every single cancer condition, without exception (no matter the location or stage of the cancer), has to do with impaired, oxygen-less respiration of the body's cells. Ozone, like its progenitor, oxygen, is a gas. Oxygen (known chemically as O_2), likes to travel in pairs.



When a third atom of oxygen binds, O_2 becomes O_3. Because O_3 is inherently unstable, it always wants to give away that extra atom. At the same time, any cell that comes into contact with O_3 will take this third atom. When this happens, oxygen's traditional properties become more powerful and more energized.

Ozone's most amazing property is that it is an extremely powerful oxidant. It will break down any chemical into that chemical's basic component parts. Ozone has been used medically to disinfect and treat disease since its discovery. In 1896, Nikola Tesla patented the first ozone generator in the United States. Ozone has been used as a safe and effective water

purifier for more than a century. Ozone deactivates pathogenic microbes in the human body in much the same way it does in water, unsurprising since our bodies are made up of 70% water.

Dr. Frank Shallenberger:

"You may have heard me report to you on several occasions about how amazing ozone therapy is at helping your body to heal and stay well. And you probably already know that I've been teaching doctors from all over the world for more than 25 years how to use ozone therapy on their patients. But wouldn't it be great if you could use many of the amazing healing properties of ozone therapy right in your own home?"

"Now here's the good news: You can, and you don't have to be a doctor. You don't even have to have any medical experience at all. If you can make a cup of coffee, you can learn to treat yourself and your family with ozone."

Don't Automatically Trust Your Doctor "It Might Kill You"



The Headline reads: HARVARD INVESTIGATION SHOWS DOCTORS ARE PAID HUGE SUMS TO PRESCRIBE ADDICTIVE OPIOIDS. "In 2010, it was found that roughly 100,000 Americans die each year from prescription drugs alone. Now, according to a recent Harvard University analysis, doctors who prescribe these pain-killers are being paid huge sums of money from their manufacturers. The research, which was conducted by Harvard scientists and CNN, discovered that in 2014-2015 thousands of doctors were paid over $25,000 from opioid manufacturers and hundreds more were rewarded with six-figure sums. Also, the more opioids that were prescribed, the larger the reward."

Now President Trump is calling for tougher sentencing of drug dealers. The headline there reads: Trump opioid plan includes death penalty for traffickers. Is that going to apply to these kinds of doctors who are accepting bribes, payoffs, to effect ruin and death into an alarming number of Americans lives?

It is hard to believe how deep this rabbit hole goes in the wonderful world of modern medicine. Just read what a former and a current editor-in-chief of the two largest most credible medical journals in the world, listen to what they have to say:

> "It is simply no longer possible to believe much of the clinical research that is published, or to rely on the judgment of trusted physicians or authoritative medical guidelines. I take no pleasure in this conclusion, which I reached slowly and reluctantly over my two decades as an editor of the New England Journal of Medicine." - Dr. Marcia Angell, a physician and longtime editor-in-chief of the New England Medical Journal (NEMJ) (source)

> "The case against science is straightforward: much of the scientific literature, perhaps half, may simply be untrue. Afflicted by studies with small sample sizes, tiny effects, invalid exploratory analyses, and flagrant conflicts of interest, together with an obsession for pursuing fashionable trends of dubious importance, science has taken a turn towards darkness." - Dr. Richard Horton, the current editor-in-chief of the Lancet - considered to be one of the most well respected peer-reviewed medical journals in the world. (source)

The question is being asked in the mainstream: How to Keep Long-Term Care From Bankrupting Us. Another is, How Can We Keep People Out of Nursing Homes? The strongest, safest, most effective and cost effective answer is hydrogen best delivered in both gaseous and aqueous forms simultaneously. Yet we hear In a startling investigation, CNN has learned that the maker of a drug designed to treat an uncommon condition is increasingly pushing it on nursing home residents with dementia and Alzheimer's - with sometimes dire consequences.

Hard to all believe how bad and expensive and dangerous the practice of modern medicine has gotten. 'No One is Coming:' Investigation Reveals Hospices Abandon Patients at Death's Door is another horror story recently released warning Americans that you are risking everything by trusting and counting on modern medicine.

> "As her husband lay moaning in pain from the cancer riddling his body, Patricia Martin searched frantically through his medical bag, looking for a syringe. She had already called the hospice twice, demanding liquid methadone to ease the agony of Dr. Robert E. Martin, 66. A family practice physician known to everyone as "Dr. Bob," he had served the small, remote community in Wasilla, Alaska, for more than 30 years. But the doctor in charge at Mat-Su Regional Home Health and Hospice wasn't responding."

> "It took six days and three more calls before he received the liquid methadone he needed. Hospice denied Patricia Martin's requests for a catheter, and she and her son had to cut away his urine-soaked clothing and bedding, trying not to cause him additional pain. The supervising hospice doctor never responded."



Most Americans are unprepared for the skyrocketing cost of long-term care! A private room in a nursing home now costs consumers more than $8,000 a month, or $97,455 a year, according to the report, which provides national median figures. That's an increase of 5.5% from just one year ago and a nearly 50% increase since 2004. A semiprivate room is less expensive, but still carries a hefty price tag: $85,775 a year.



Former vice President of Pfizer, Dr. Peter Rost, has blown the whistle on the dangers of the Gardasil vaccine - and claims that Big Pharma aims to keep people unhealthy. This is no surprise and the vaccines companies do not care because they are not liable for anything in terms of all the damage vaccines do to children and their families.

As Dr. Frost says, everyone is looking for money and "only the big multinationals have it. Meaning the human race is depending on a greedy, crooked, lying, deceiving medical industrial complex and are getting shafted for their trust."



Photographer: Matt Rourke/AP Photo

Another Headline: Spotting Alzheimer's Early Could Save America $7.9 Trillion. "A new report says the cost of care will increase by $20 billion in just one year. While there's no cure, quicker diagnosis might lower the price tag. Alzheimer's disease is among the most expensive illnesses in the U.S. There's no cure, no effective treatment and no easy fix for the skyrocketing financial cost of caring for an aging population." No doubt, the medical mafia do not have a cure. However, there is much that modern medicine could do if it were not dominated by a rottenness at its core.

Death and Harm by Oncology

The headlines read, "Cancer survivors age faster and are far more likely to die sooner," if they have been treated by oncologists, a major study has shown. A review, published in ESMO Open, the journal of the European Society of Medical Oncology, into more than 1,200 published articles, found that the average life expectancy of childhood cancer survivors is 30 per cent lower than the general population.

In general, cancer survivors are more likely to develop long term conditions, such as heart problems, lung scarring, secondary cancers and frailty. They will also get age-associated illnesses sooner than the general population, the analysis suggests.

Drugs called anthracyclines are a staple of breast cancer chemo despite the well-known risk: **They weaken women's hearts.** "In the process of curing their breast cancer, we've exposed them to some pretty nasty things. And it's not just one nasty thing, it's a

sequence of nasty things," explains Dr. Pamela Douglas, a Duke University cardiologist.



A few years ago, Lord Maurice Saatchi called for the law relating to cancer treatment to be changed in England. He describes the current law as a "barrier to progress in curing cancer" and says doctors are deterred from trying new forms of treatment in case they are sued. He said on public television, "The **current treatments for women are medieval, degrading and ineffectiv**e. Women think of the worst part of treatment as hair loss, but this is the good news. The less good news is the effect of the drugs-nausea, vomiting, fatigue-but this is still the good news. The really bad news is that the effects of the drugs on the immune system of women allow fatal infections to enter the body. Women are then as likely to die from the infection as from the cancer."

Conclusion

The institution of medicine seems to have come up with their own FINAL Solution, a killing machine whose steel frame is medical arrogance. I came to this conclusion when writing about Sepsis and noticing how doctors in mass were rejecting one doctors use of Vitamin C to vastly reduce the death rate of his patients. The half that demonstrated outright rejection, ridicule and scorn, it is their attitudes that will continue to let people die rather than open their minds and hearts to something new and innovative from medical science?

At this point how many people do you know, at any age, who are not dependent on at least one type of medicine? Doctors in America outdo all other doctors around the world hooking their patients on drugs.

In the troubled society in which we live the combination of physical and emotional

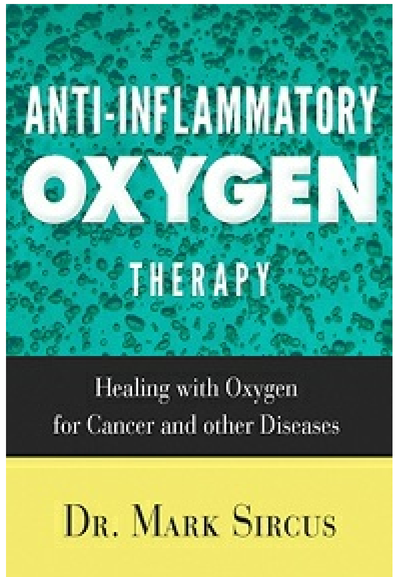
stresses it is sometimes fatal to take even properly prescribed medicines. The result of everything we are facing as individuals and families is leaving more and more people walking at the edge of their energies, and whatever else they must face - whether it is a change in climate or disagreement with someone you love - plays them directly in a health crisis.

Almost everyone, nowadays, lives around with doctors, medicines, endless exams .... and, nevertheless, constantly getting sick again. Doctors and the governmental institutions that stand behind them do not think anything is wrong and I am sorry to say and compare, the Nazi did not think they were doing anything wrong either. It is that bad.

When we seek the solution to all our physical ills in conventional medicine, what usually happens is that in curing a symptom, we create others - whether in the short or the long term. All pharmaceutical drugs and other conventional medicine practices have side effects, and are often much larger than we think, locking us into a never-ending circle of health problems.

The current medical model presents an extremely fragmented and reductionist view of body and health. We need to change this paradigm and see the human being as he really is, an integration of body, mind, energy, emotions .... all these factors interfere in the health of the body.

PEMF Increases Oxygen Utilization



Increasing Cell Respiration with Hydrogen and PEMF

Hydrogen is not the only thing in the universe that will make things burn brighter. In 2003 NASA's Dr. Thomas Goodwin found that 10 Hz pulsed electromagnetic field caused neural tissue regeneration at 4x baseline. Both 5 and 15 Hz provided 2x neural tissue regeneration with a perfect bell-shaped curve around 10 Hz. In 1989 Dr. David Hood found chronic (35+ days) 10 Hz stimulation at 10 hours per day **increased two critical enzymes of cell respiration by a factor of three.**

There was a movie about scientists looking for the ultimate hydrogen reaction; they searched for the perfect frequency that they could inject into a hydrogen plasma field. In real life these frequencies are known as the Shumen Waves and they are the frequencies the earth itself puts out into the atmosphere.

There are two PEMF machines that saturate the body, one will do it all night long with 10 HZ, and the other is more for treatment of specific body parts. Mitochondria under stimulation by pulsed electromagnetic fields (PEMF), at these low frequency ranges, synthesize more ATP from the oxygen we breathe. Cell's burn oxygen more efficiently, drawing oxygen from blood more slowly, producing more energy and less waste from every breath, resulting in an abundance of cellular energy causing these profound regenerative effects.

This extra energy is available at night for repair, hormone synthesis, memory consolidation and immune support; and during the day for physical and mental performance enhancement (ergogenic effects). More energy out of every breath you take, which is like the claims made when using singlet oxygen therapy.



Dr. Dominic D'Agostino, a researcher and assistant professor with the University of South Florida Morsani College of Medicine, said "cancer is starved" by eating a diet that is restricted in carbohydrates but high in certain fats. The patient then receives hyperbaric chamber treatments, in which oxygen has a further toxic effect on the cancer cells, explaining a possible one-two punch to knock out cancer.

D'Agostino began research nine years ago involving metabolic therapy and hyperbaric oxygen to help Navy SEAL divers avoid seizures from oxygen toxicity. A 10-year-old boy with a cancerous brain tumor who had already received a battery of traditional conventional radiation therapy has gotten positive results from this. The youth responded "remarkably" to the combination of diet and hyperbaric treatment.

Low-level electromagnetic fields are known and used to halt cancer cell growth. Pulsed Magnetic Field Therapy (PEMF) is FDA approved to promote the healing of non-healing bone unions and has been used in Europe for over 20 years in 400,000 sessions with individuals with cancer,[cxli] migraines, sports related injuries, wound healing and other pain syndromes. PEMF-based anticancer strategies represent a new therapeutic approach to treat breast cancer without affecting normal tissues in a manner that is non-invasive and can be potentially combined with existing anti-cancer treatments.[cxlii]

> Costa *et al* (2011) reported surprising clinical benefits from using the specific EMF signals to treat advanced hepatocellular carcinoma, stabilizing the disease

> and even producing partial responses up to 58 months in a subset of the patients. Now Zimmerman *et al* have examined the growth rate of human tumor cell lines from liver and breast cancers along with normal cells from those tissues exposed to AM-EMF. Reduced growth rate was observed for tumor cells exposed to tissue-specific AM-EMF, but no change in growth rate in normal cells derived from the same tissue type, or in tumor or normal cells from the other tissue type.[cxliii]

In layman's terms, low-frequency pulses create a brief, intense voltage around each cell. The mitochondria within the cell grab some of this energy. This, in turn, makes the cell more efficient at producing ATP and delivering oxygen throughout the body. PEMF therapy supports the metabolism and increases the blood flow by dilating micro capillaries throughout the whole body allowing all cells to breath and function better.

Dark field microscopy shoes that clustering in the erythrocytes can be cleared with PEMF. This leads to: improved viscosity of the blood, improved blood flow, enlargement of the surface area, increased oxygen levels and reduced risk of thrombosis. Thermo-graphic measuring charts show the increase of circulation after exposure to PEMF. This leads to better nutrition and rejuvenation of cells.

All biological process and in particular the metabolism of every single cell are substantially based on electromagnetic energy. Only an organism which is sufficiently supplied with energy is able to control the self-regulating mechanisms and powers of regeneration and healing. One of the common constituents of all cells are ions. Ions are positively and negatively charged particles that conduct electro-magnetic pulses from within the cell. The electro-magnetic pulses allow the cell to function. PEMFs affect ion flow through specific cell membrane channels (like those for sodium, potassium, and calcium), which positively affect these enzymes. Without ions, a cell cannot live. Without sufficient energy fields cells do not function at 100%.

Diseased or damaged cells have an altered rest potential. If the ions (electrically charged particles surrounding the cells) move into an area of pulsating magnetic fields, they will be influenced by the rhythm of the pulsation. The rest potential of the cell is proportional to the ion exchange occurring at the cell membrane. The ion exchange is also responsible for the oxygen utilization of the cell. Pulsating magnetic fields can dramatically influence the ion exchange at the cellular and sub cellular levels and thereby greatly improve the oxygen utilization of diseased or damaged tissues. The deterioration of the oxygen utilization is known to be a problem in several medical branches, especially in delayed healing and arthritis of joints. Poor oxygen utilization = increased oxidative stress that results in worse oxygen utilization.

All atoms, chemicals and cells produce electromagnetic fields (EMFs). Every organ in the body produces its own signature bio-electromagnetic field. Science has proven that our bodies actually project their own magnetic fields and that all 70 trillion cells in the body communicate via electromagnetic frequencies. Nothing happens in the body without an electromagnetic exchange. When the electromagnetic activity of the body ceases, life ceases. When we increase electromagnetic energies, we increase life and promote healing.

Earth Pulse

What I chose and am happy using is the EarthPulse machine that puts out earth & Schumann frequencies around the 10hz area. It is a low cost but extremely powerful machine that is designed to use all night long while one is sleeping. Unlike more expensive pulsed electromagnetic field systems, these long nightly sessions are where the magic of the EarthPulse occurs.EarthPulse has numerous reports of waking saturated blood oxygen increasing levels by 5% in just a few days.



EarthPulse allows magnetic field supplementation through footwear, clothing, or at nighttime through your mattress or pillow. PEMF reduces inflammation via a number of mechanisms including restoration of cell membrane homeostasis, attenuating pro inflammatory cytokine Interleukin-1beta (IL-1β) by 10-fold, by reducing expression of major pro-inflammatory genes and increasing expression of anti-inflammatorygenes.





The [FlexPulse](#) is another nice system at the lower end of what PEMF equipment can cost you. The EarthPulse is best for all night treatment and the Flexpulse for when you need to direct the frequency waves at a specific area.

Doctors in Brazil have found that pulsed electromagnetic field exposure relieves the effect of microwave exposure by inducing Faraday currents. Electromagnetic fields are recognized as hazards that affect testicular function by generating reactive oxygen species and reduce the bioavailability of androgen to maturing spermatozoa. Thus, microwave exposure adversely affects male fertility, whereas pulsed electromagnetic field therapy is a non-invasive, simple technique that can be used as a scavenger agent to combat oxidative stress.[cxliv]

PEMF Treats Cancer and Improves Oxygen Delivery

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Another way PEMFs increase oxygen is in its power to reduce chronic, damaging inflammation. PEMFs can induce the appropriate death of aged, chronic T lymphocytes, by actions on T cell membranes and key enzymes in cells. The elimination of T cells can minimize the unwanted effects of inflammation, accelerate healing, and reduce the risk of chronic inflammatory diseases.

The Oxidative Effects of Wireless Radiation



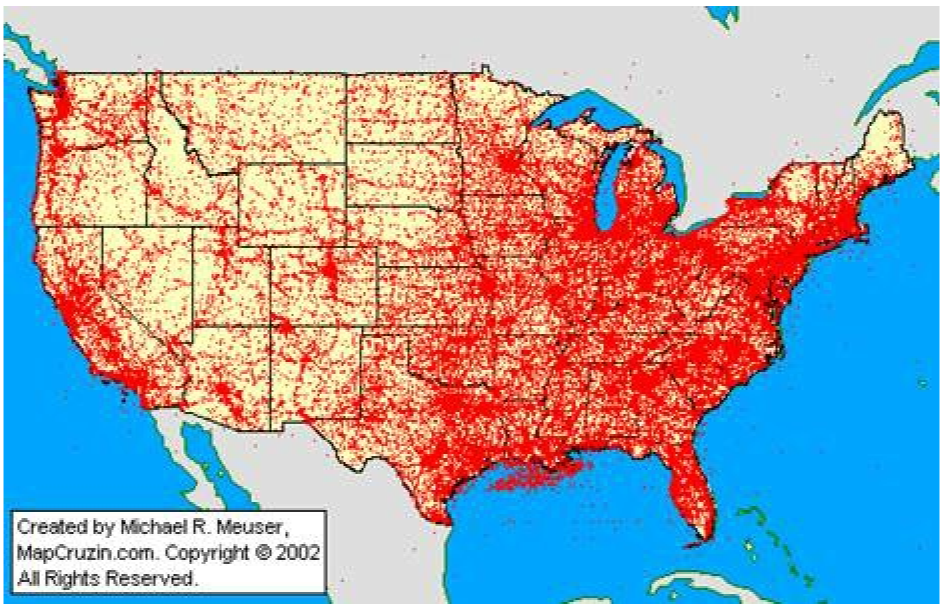
Illustration by Don Carroll.

The Nation published, "The scientific evidence that cell phones and wireless technologies in general can cause cancer and genetic damage is not definitive, but it is abundant and has been increasing over time. Contrary to the impression that most news coverage has given the public, 90 percent of the 200 existing studies included in the National Institutes of Health's PubMed database on the oxidative effects of wireless radiation—its tendency to cause cells to shed electrons, which can lead to cancer and other diseases—have found a significant impact, according to a survey of the scientific literature conducted by Henry Lai. Seventy-two percent of neurological studies and 64 percent of DNA studies have also found effects."

The Nation continues and raises the alarm, "The wireless industry's determination to bring about the Internet of Things, despite the massive increase in radiation exposure this would unleash, raises the stakes exponentially. Because 5G radiation can only travel short distances, antennas roughly the size of a pizza box will have to be installed approximately every 250 feet to ensure connectivity. "Industry is going to need

hundreds of thousands, maybe millions, of new antenna sites in the United States alone," said Moskowitz, the UC Berkeley researcher. "So, people will be bathed in a smog of radiation 24/7."

"We simply can't escape the exposure to this radiation. It's everywhere. There are so many people using cell phones and wireless connections today that you don't even have to own a cell phone to be exposed. You're just as exposed as everyone else. Every time someone makes a call from a mobile phone the signal is sent to a cell phone tower. There are so many calls being made by everyone all around us and now there are so many mobile phone towers in operation, that all of us are caught in the crossfire. It's like second-hand smoke from cigarettes, except that we can't get away from it. There simply isn't anywhere to escape," writes Lynn Quiring.



Writing back in 2008 Quiring notes, "Today cell phone towers have increased dramatically in number. There are now more than 1.9 million cell phone towers and antenna towers spread throughout the U.S. They are now found on churches, schools and firehouses as well as being seen on the rooftop of buildings everywhere." 5 G will take this to an entirely new level.

All of us alive today must worry about oxidative stress. In July 2015, a review of existing studies on radiofrequency radiation (RFR) was published by National Academy of Sciences in Ukraine, Indiana University, and the University of Campinas in Brazil. Based on "93 out of 100 peer-reviewed studies, it concluded that low-intensity RFR radiofrequency radiation is an expressive oxidative agent for living cells with a high pathogenic potential, and that oxidative stress induced by RFR exposure should be

recognized as one of primary mechanisms of biological activity of this kind of radiation. This explains a range of biological/health effects of low-intensity RFR, which includes both cancer and non-cancer pathologies."

Representatives from the industry are quick to point out the microwaves emitted by cell phone towers are well below federal standards but who would trust their government to protect them from harm. This same government in the United States also thinks injecting babies with mercury and aluminum in vaccines is fine. The article in The Nation rolls out a convincing barrage of studies warning us to take care and beware what we are doing with our cell phones and wireless systems.

Oxidative stress is getting out of hand and that is why we are seeing alarming increases in almost all disease categories and it is going to get much worse as 5 G comes into wide use. However, the story is old. Microwave - and other forms of electromagnetic - radiation are major (but conveniently disregarded, ignored, and overlooked) factors in many modern unexplained disease states. Insomnia, anxiety, vision problems, swollen lymph, headaches, extreme thirst, night sweats, fatigue, memory and concentration problems, muscle pain, weakened immunity, allergies, heart problems, and intestinal disturbances are all symptoms found in a disease process the Russians described in the 70's as Microwave Sickness.

In a recent scientific study conducted by a team of researchers from Israel, a possible link between microwave radiation, similar to the type found in cellular phones, and different kinds of damage to the visual system was found. At least one kind of damage seems to accumulate over time and not heal.[1]



A study from Israel's Tel Aviv University, examined 622 people living near a cell phone transmitter station for 3-7 years who were patients in one clinic in Netanya and compared them against 1222 control patients from a nearby clinic. Participants were very closely matched in environment, workplace and occupational characteristics. The people in the first group live within a half circle of 350m (1148 feet) radius from the transmitter, which came into service in July 1996. The results were startling. Out of the 622 exposed patients, eight cases of different kinds of cancer were diagnosed in a period of just one year (July 1997 to June 1998): three cases of breast cancer, one of ovarian cancer, lung cancer, Hodgkin's disease (cancer of the lymphatic system), osteoid osteoma (bone tumour) and kidney cancer. The relative risk of cancer was 4.15 for those living near the cell phone transmitter compared with the entire population of Israel. Women were more susceptible. As seven out of eight cancer cases were women, the relative cancer rates for females were 10.5 for those living near the transmitter station and 0.6 for the controls relative for the whole town of Netanya. One year after the close of the study, eight new cases of cancer were diagnosed in the microwave exposed area and two in the control area.

In her extraordinary article The Radiation Poisoning of America, by Amy Worthington, we find that studies confirm that non-ionizing communications radiation in the RF/microwave spectrum has the same effect on human health as ionizing gamma wave radiation from nuclear reactions. Leading German radiation expert Dr. Heyo Eckel, an official of the German Medical Association, states, 'The injuries that result from radioactive radiation are identical with the effects of electromagnetic radiation. The damages are so similar that they are hard to differentiate."

Amy Worthington writes, "Because gamma waves and RF/microwave radiation are identically carcinogenic and genotoxic to the cellular roots of life, the safe dose of either kind of radiation is zero. No study has proven that any level of exposure from cell-damaging radiation is safe for humans. Dr. Carlo confirms that cell damage is not dose dependant because any exposure level, no matter how small, can trigger damage response by cell mechanisms."[2]

This is where we stand today. The public has no vote, no voice,
no choice. Chronic exposure to scientifically indefensible levels of
DNA-ravaging radiation is now compulsory for everyone in America.
Amy Worthington

Worthington continues, "Since the wireless revolution began wave-nuking the U.S. in the 1990s, there have been **no federally funded health studies** to assess the cumulative effects of ever-increasing communications radiation on public health. There

is no national database enabling citizens to study the location of transmitters in their areas. Local and state governments can offer no information on how much commercial wireless radiation is contaminating their populations. When trying to find out who owns a tower or which companies have transmitters on that tower, citizens usually hit a brick wall."



A study by Dr. Bruce Hocking in Australia found that children living near three TV and FM broadcast towers (like cell towers) in Sydney had more than twice the rate of leukemia than children living more than seven miles away. According to the Mount Shasta Bioregional Ecology Center, "Studies have shown that even at low levels of this radiation, there is evidence of damage to cell tissue and DNA, and it has been linked to brain tumors, cancer, suppressed immune function, depression, miscarriage, Alzheimer's disease, and numerous other serious illnesses." But imagine a physician diagnosing such a thing tracing it back to electromagnetic radiation. In fact we are being bombarded with so many toxic influences simultaneously we have to factor in all of them in our diagnosis and treatment.

Conclusion

Denial is the name of the toxicity game that industry has played for well over a hundred years. From the chemical industry, then to the petrochemical one, on into the pharmaceutical universe, the atomic one and most recently the telecommunications industry. All these industries make money from toxic substances deny that there are any problems with them in terms of health.

Reducing the amount of oxidative stress, we are constantly faced with, is one of the most important things we can do for our health. A buildup of toxins in our body can cause

many health concerns as cacogenic effects take place, slowly malfunctioning and killing the cells that make up every aspect of our body. Doctors and health officials do not see things this way for the only way they know how to practice medicine is to increase toxic exposures with pharmaceutical medicines along with tests and treatments that use harmful radiation. **Nothing will take down oxidative stress like hydrogen inhalation**.

The case for the introduction and wide spread use of hydrogen inhalation therapy is only going to increase as exposure rates surge for microwave transmissions. Humanity is in for a rude awakening across a broad range of toxic issue as if disease rates were not high enough already.

The Nation warns, “The Internet of Things will require augmenting today’s 4G technology with 5G, thus “massively increasing” the general population’s exposure to radiation, according to a petition signed by 236 scientists worldwide who have published more than 2,000 peer-reviewed studies and represent “a significant portion of the credentialed scientists in the radiation research field,” according to Joel Moskowitz, the director of the Center for Family and Community Health at the University of California, Berkeley, who helped circulate the petition. Nevertheless, like cell phones, 5G technology is on the verge of being introduced without pre-market safety testing.”

[1] http://www.isracast.com/Articles/Article.aspx?ID=57

[2] https://www.globalresearch.ca/the-radiation-poisoning-of-america/7025